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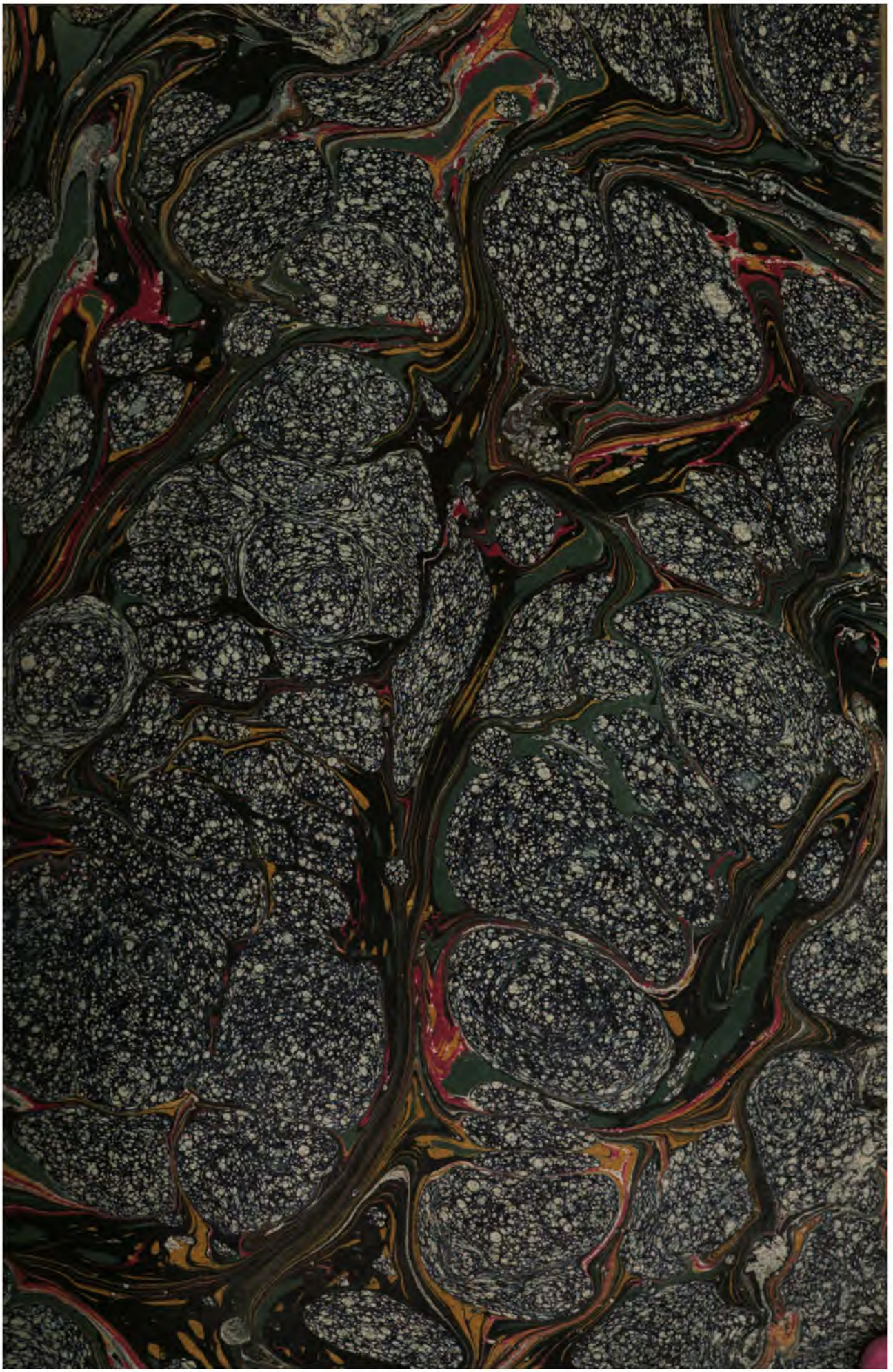

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OF THE PRINCIPAL

HARBOURS, BAYS, & ROADS,

IN

St. George's and the Bristol Channels,

FROM

SURVEYS,

UNDER THE DIRECTION OF THE LORDS OF THE ADMIRALTY,

By the late intelligent and ingenious Hydrographer,

LEWIS MORRIS, ESQ.

WITH

HINTS ON IMPROVEMENTS

FOR THE GREATER SECURITY

Of the Navigation on the Coast of Wales:

TOGETHER WITH

SOME USEFUL TABLES FOR MARINERS.

A NEW EDITION,

WITH ADDITIONAL OBSERVATIONS,

FROM SURVEYS LATELY MADE

By WILLIAM MORRIS.

SHREWSBURY,

PRINTED FOR THE AUTHOR, BY SANDFORD AND MADDOCKS.

1801.

TO THE RIGHT HONORABLE

THE LORDS COMMISSIONERS

FOR EXECUTING THE OFFICE OF

Lord High Admiral of the United Kingdom of Great-Britain and Ireland,

THESE

P L A N S

ARE, BY PERMISSION,

MOST RESPECTFULLY DEDICATED,

By their Lordſhips'

Obedient humble Servant,

William Morris.

ABERYSTWITH,
June 1, 1801.

TO THE READER.

As this performance may be eſteemed the only one of the kind ever publiſhed in Great-Britain, it may not be improper to give ſome account of the riſe, progreſs, and nature of the undertaking. The melancholy accounts of ſhipwrecks and loſſes on the Coaſt of Wales, (chiefly occaſioned by the very ſlender knowledge and imperfect deſcription of that coaſt) pointed out to the Lords of the Admiralty the neceſſity of an actual ſurvey, and their Lordſhips were pleaſed to order my father, the late Lewis Morris, upon that ſervice; but as his ſurveys extended only from Ormes Head, near Cheſter Bar, to Milford Haven, they were found inadequate to the deſired end; I therefore undertook to extend them to Liverpool, and to Cardiff in the Briſtol Channel, and to include the Eaſt Coaſt of Ireland from Dublin to Wexford, which now renders the ſurvey of the Welſh and Iriſh Coaſts in St. George's and the Briſtol Channels complete.

I cannot avoid obſerving in this place, that ſome of the Engliſh draughts of the Coaſts of Wales and Ireland, which are now in the hands of ſailors, and which paſs for new and correct charts, (I mean ſuch as have come within the compaſs of my obſervation,) are evidently no other than very imperfect eye draughts, or elſe very corrupt copies of antient ſurveys; and are upon no account to be depended upon. I am far from cenſuring the performance of others, but I take it to be the duty of every man to make public a matter which is of ſo great conſequence to the nation. The correctneſs neceſſary in undertakings of this kind, by ſea and by land, demands extraordinary care and application; and the many obſervations proper for determining juſtly the ſituations and poſitions of places, time of tide, ſoundings, &c. require the utmoſt attention, and much labour and pains, which ought

not, in ſuch caſes, to be ſpared, where the lives and property of ſo many perſons (the moſt valuable part of his Majeſty's ſubjects) are concerned. In this ſurvey and publication, beſides the cloſe application and hard labour requiſite, I found almoſt inſuperable difficulties, and that it required a reſolution not eaſily to be intimidated to go through with it, as the chief part of the buſineſs was to ſearch carefully for thoſe dangers others have endeavoured as carefully to avoid; and I am firmly of opinion that nothing material hath eſcaped my obſervation, that relate to theſe ſurveys: this may be ſeen by comparing other draughts with the General Chart, which is alſo publiſhed from an actual ſurvey, and on which every dependence may be placed.

One obſervation more I may venture to make as peculiar to this work; and that is, the names of places are inſerted according to their true orthography; whereas in other charts and maps of the coaſt, they are generally ſo inaccurately ſpelt, as not to be known by either natives or inhabitants; and are, for the moſt part, the ſpurious productions of ignorant tranſcribers and careleſs engravers.

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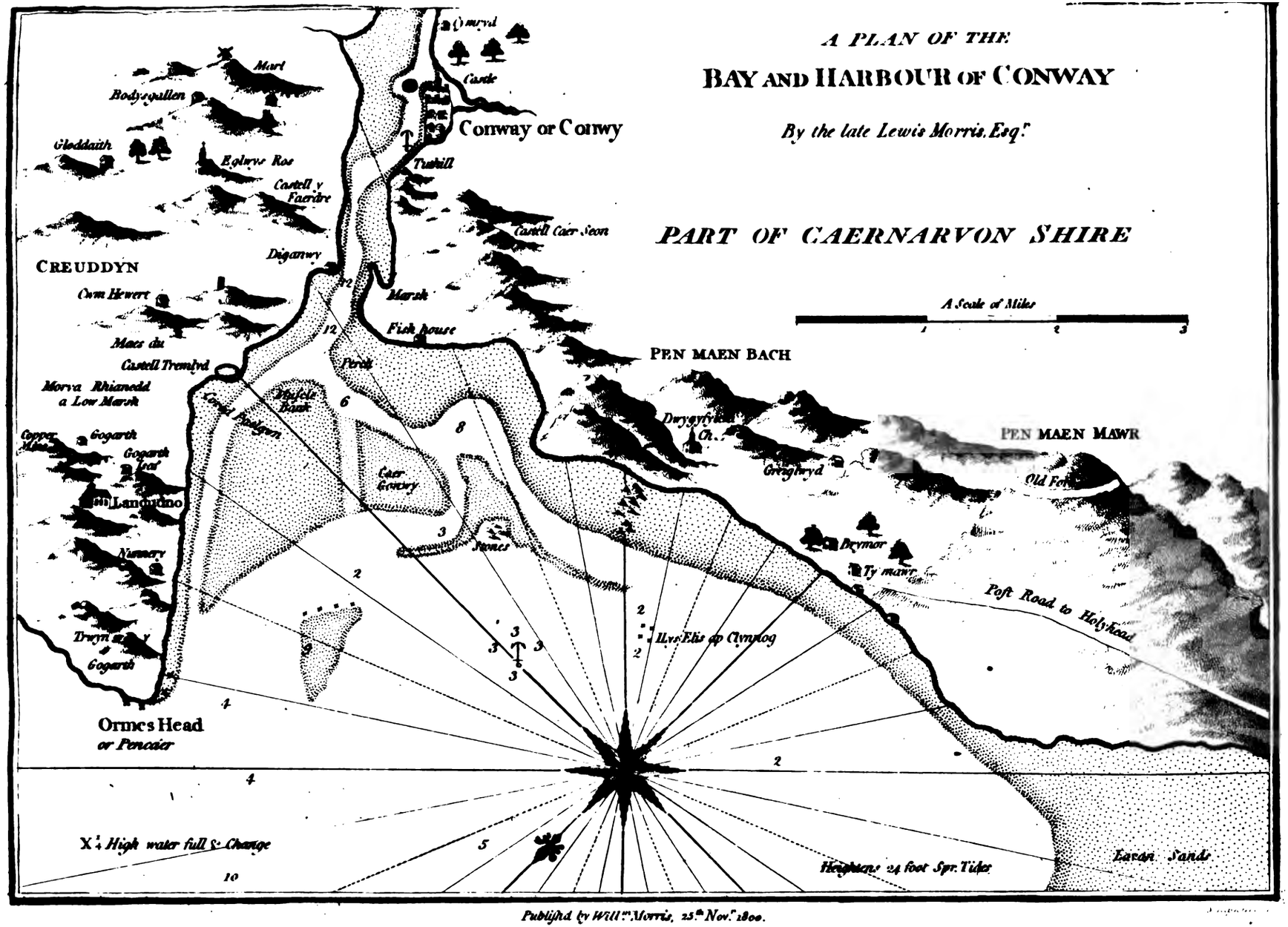

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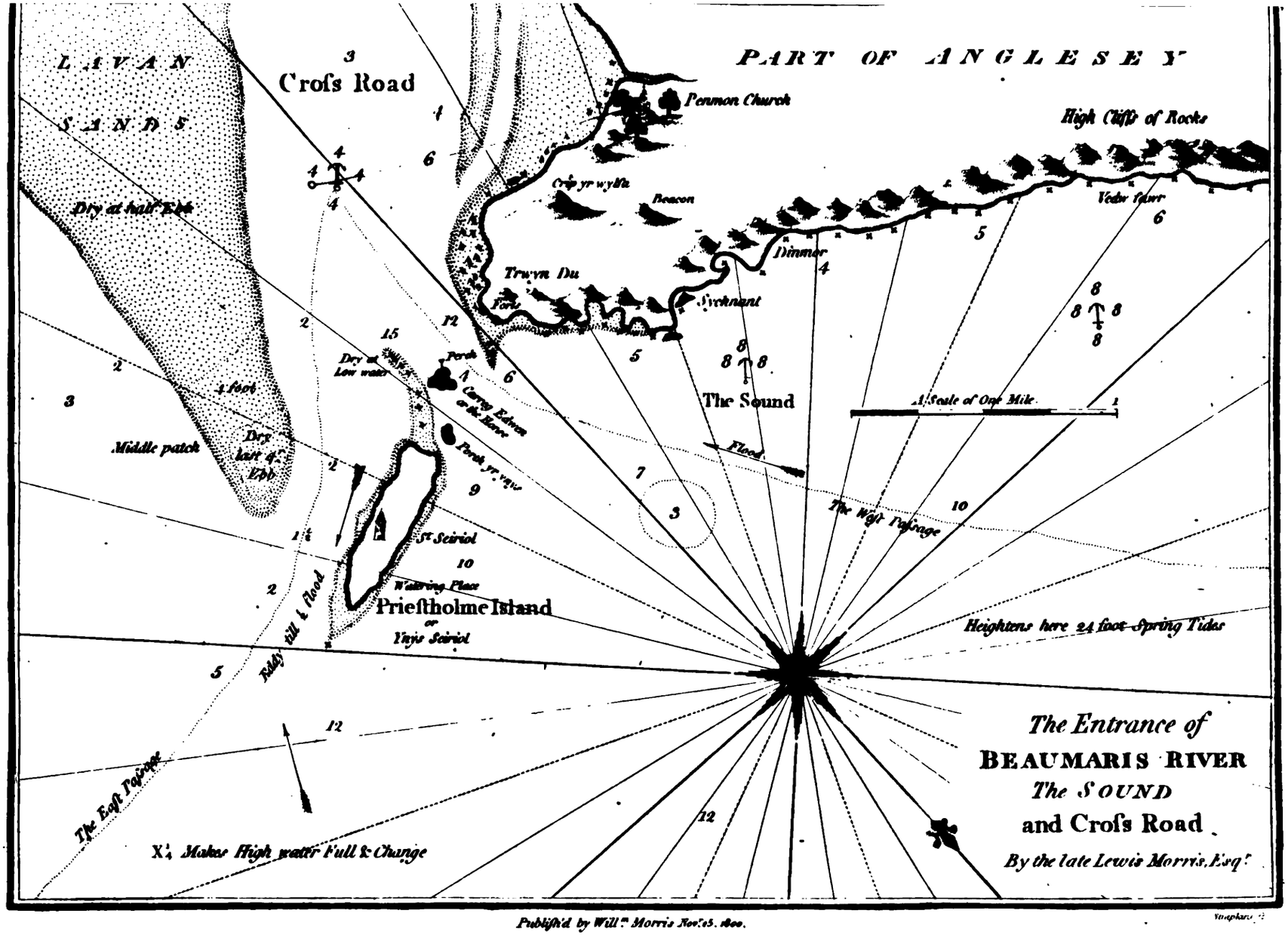
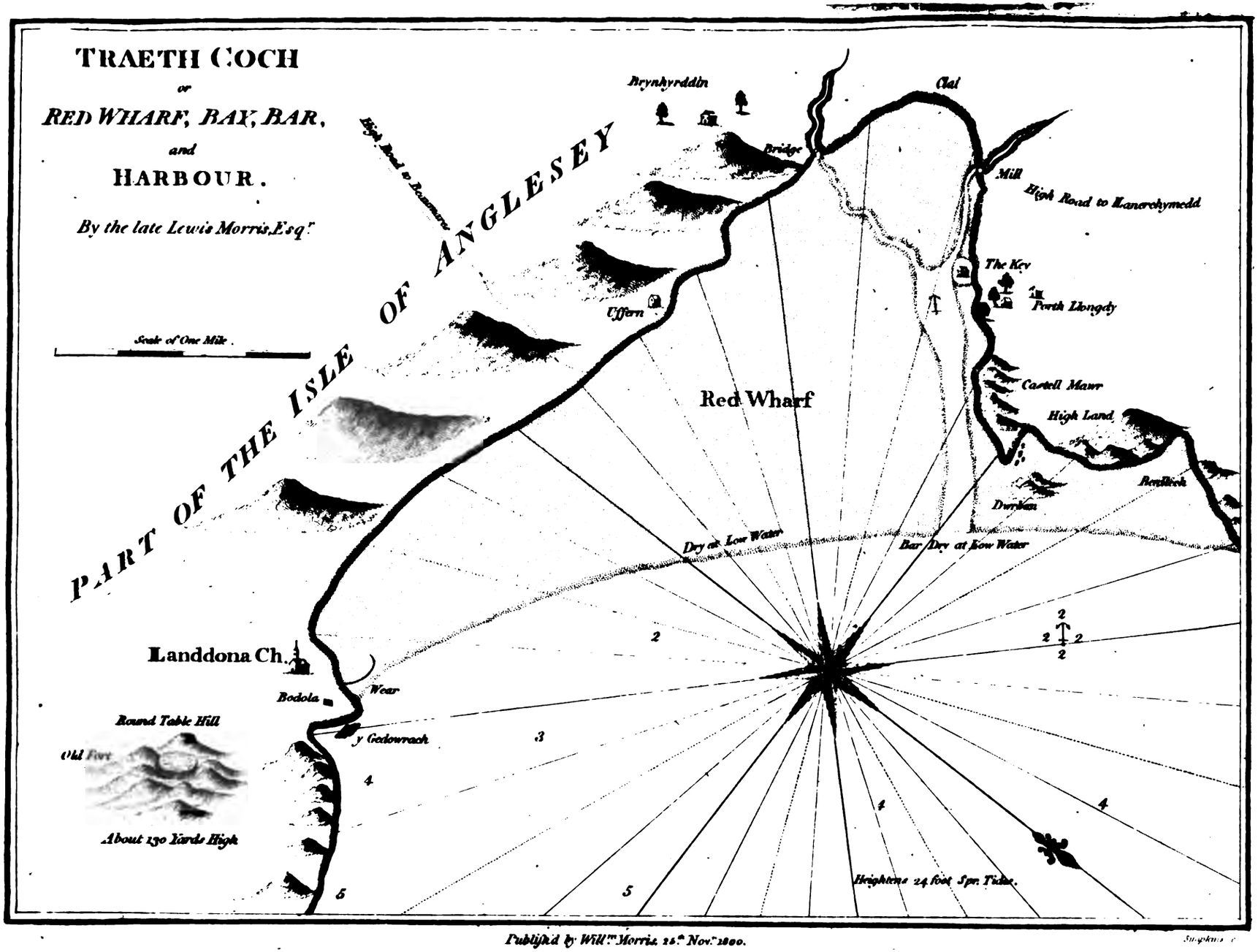
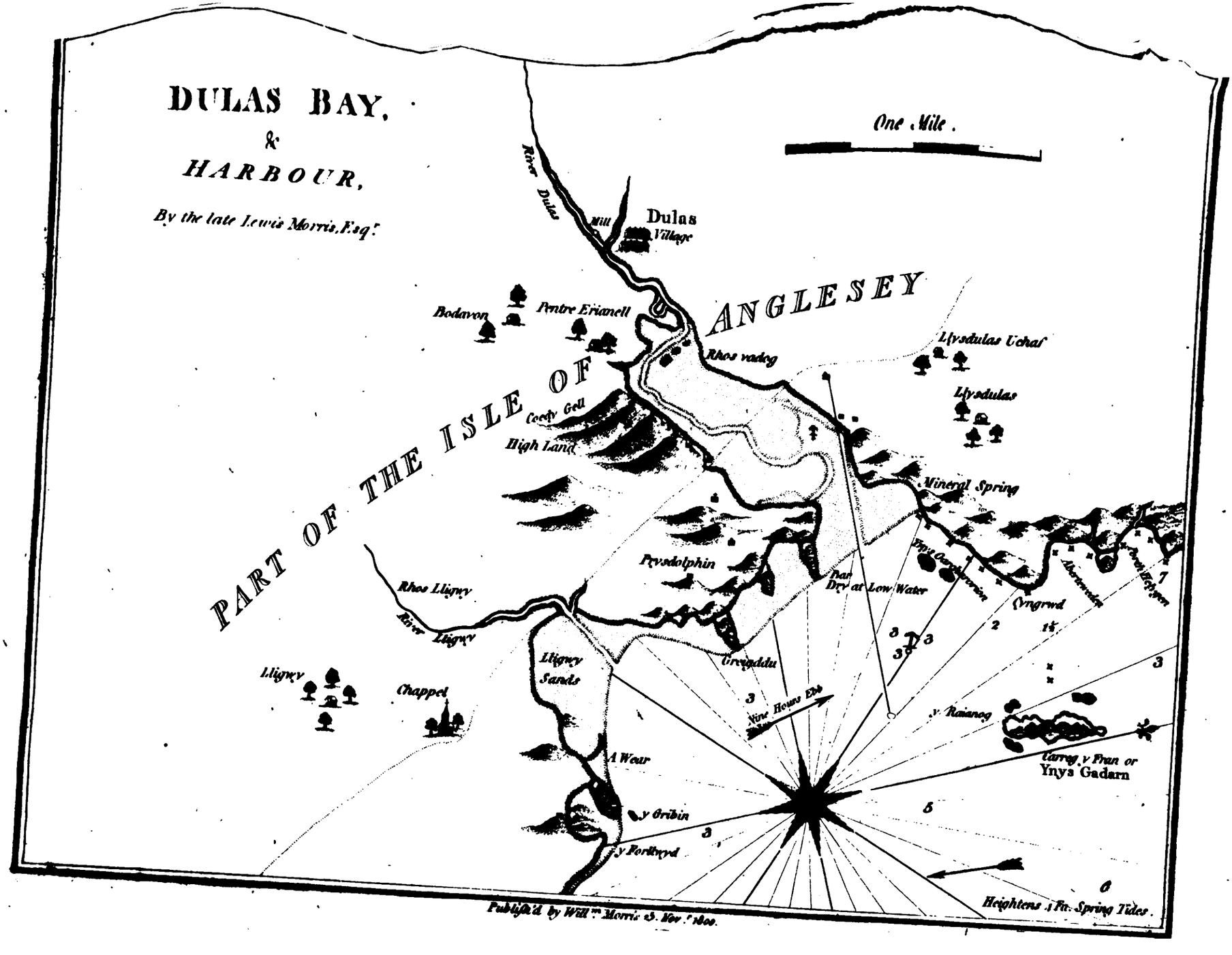
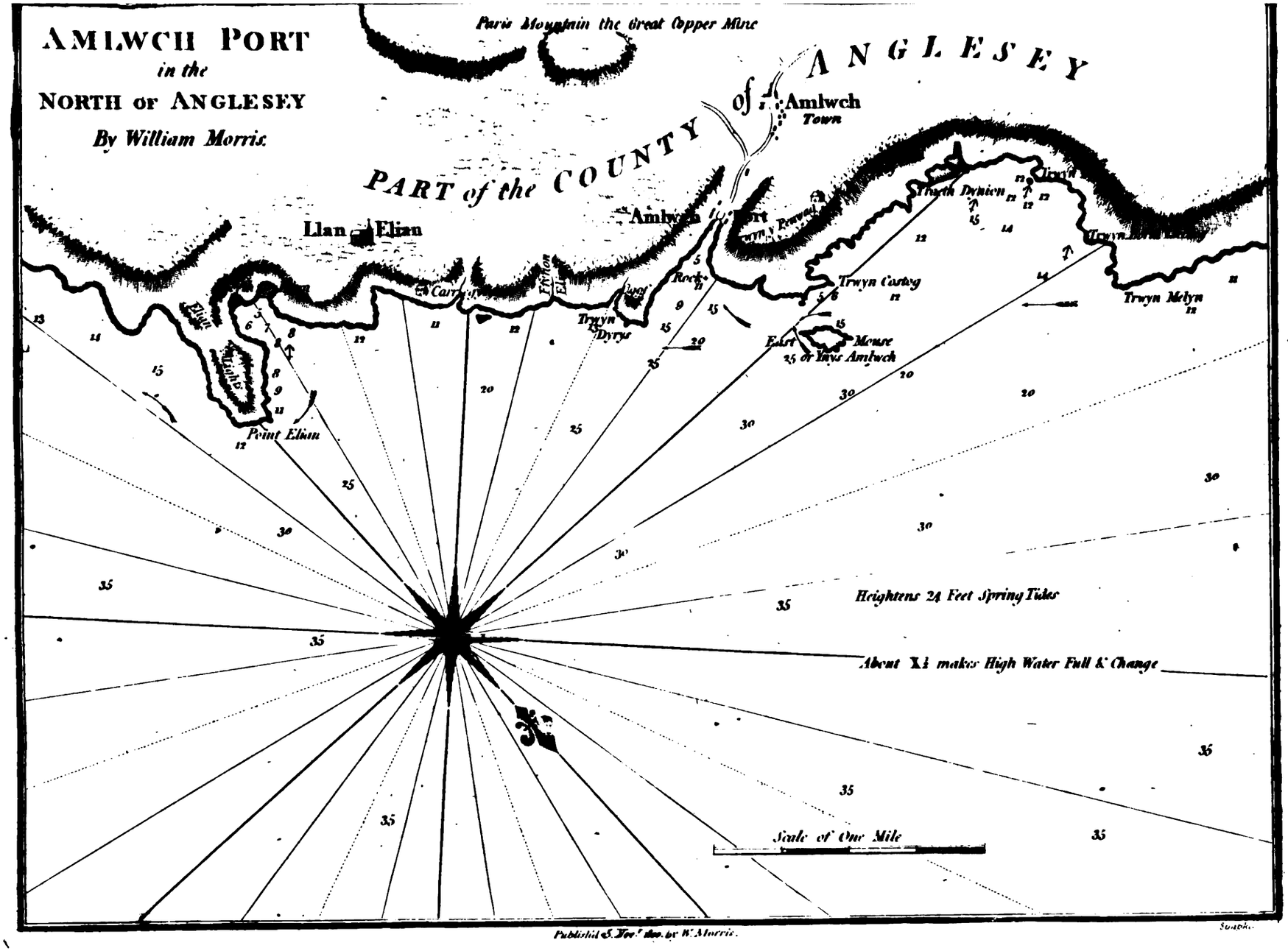


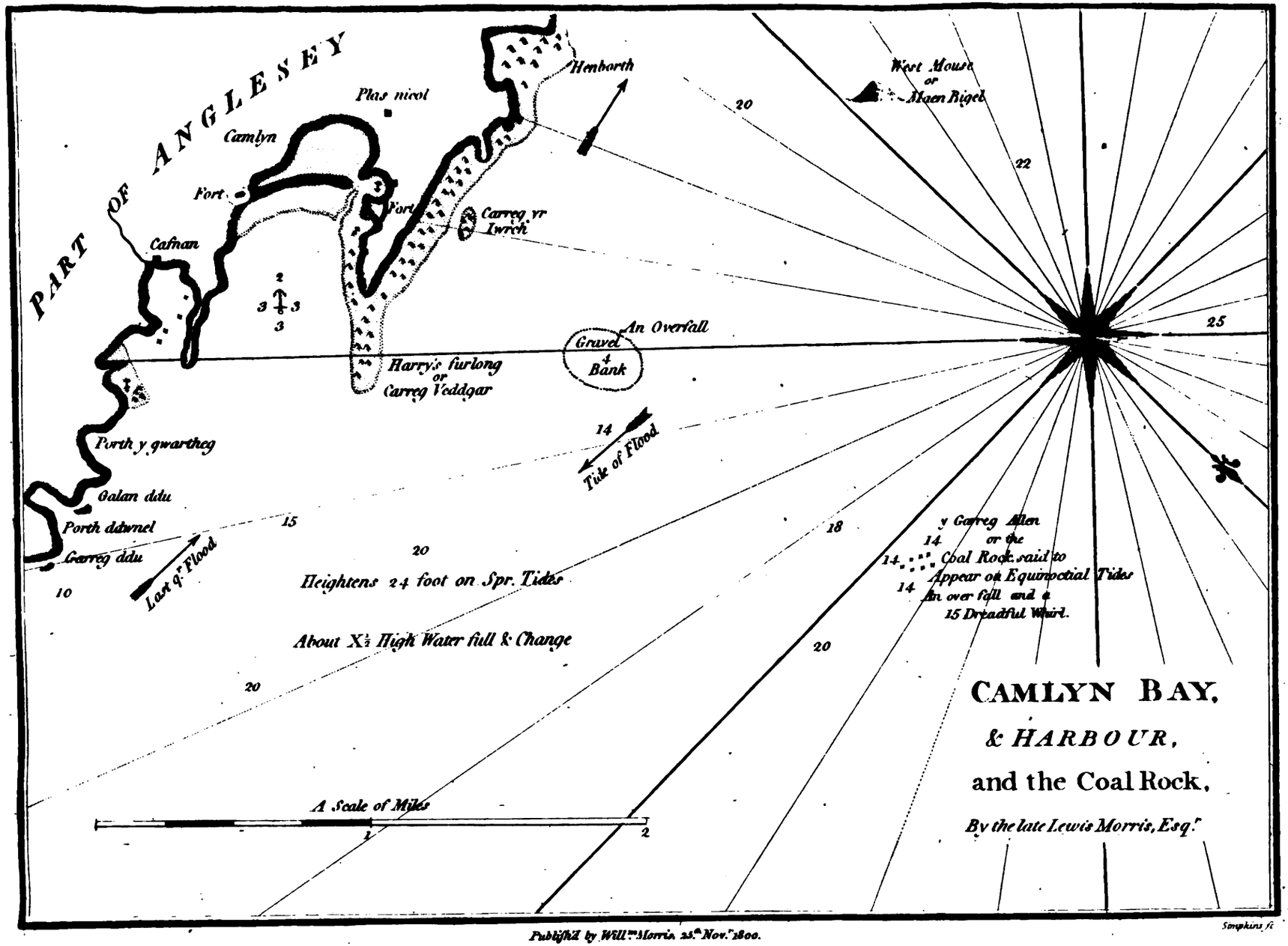
Publish'd by Wm. Morris Nov. 5. 1800.



Published by Will.m Morris 25.th Nov.r 1800.

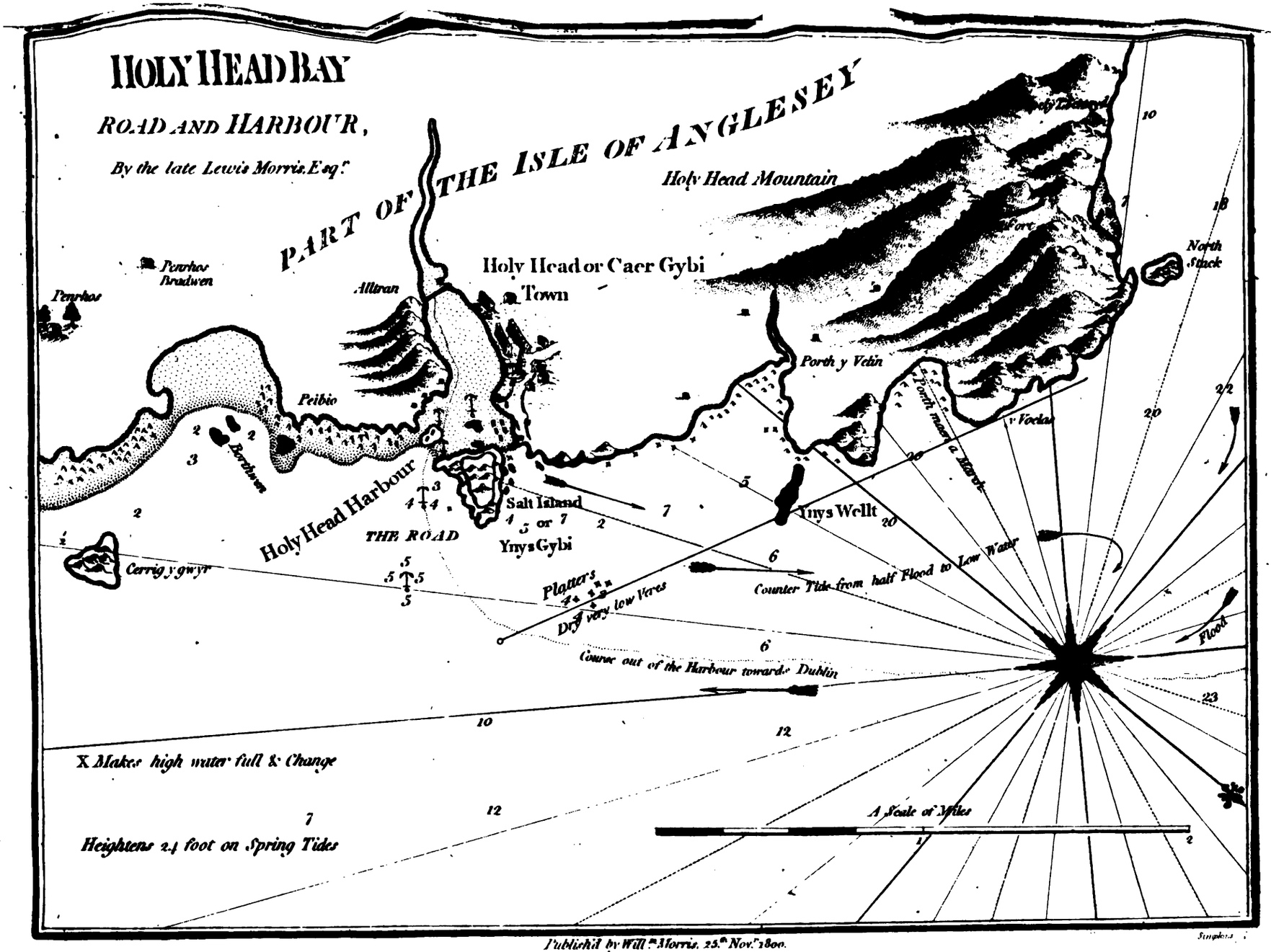

DULAS BAY,
&
HARBOUR,
By the late Lewis Morris, Esq.r
One Mile.
River Dulas
Mill
Dulas
Village
Bodavon
Pentre Erianell
Rhos vadog
PART OF THE ISLE OF ANGLESEY
Llysdulas Uchaf
Llysdulas
Coed y Gell
High Land
Mineral Spring
Prysdolphin
Rhos Lligwy
River Lligwy
Bar
Dry at Low Water
Cyngrwd
Lligwy
Lligwy Sands
Chappel
Gwyddu
Nine Hours Ebb
y Rhanog
A Wear
Carreg y Fran or
Ynys Gadarn
y Gribin
y Forthwyd
Heightens 1 Ft. Spring Tides.
Publish'd by Wm. Morris 3. Nov.r 1800.


AMLWCH PORT
in the
NORTH of ANGLESEY
By William Morris.
Paris Mountain the Great Copper Mine
ANGLESEY
PART of the COUNTY of
Amlwch
Town
Llan Elian
Amlwch Port
Point Elian
Trwyn Dyrys
Trwyn Castog
Trwyn Melyn
East Mouse
Heightens 24 Feet Spring Tides
About XI makes High Water Full & Change
Scale of One Mile
Published 5 Nov.r 1800 by W. Morris.



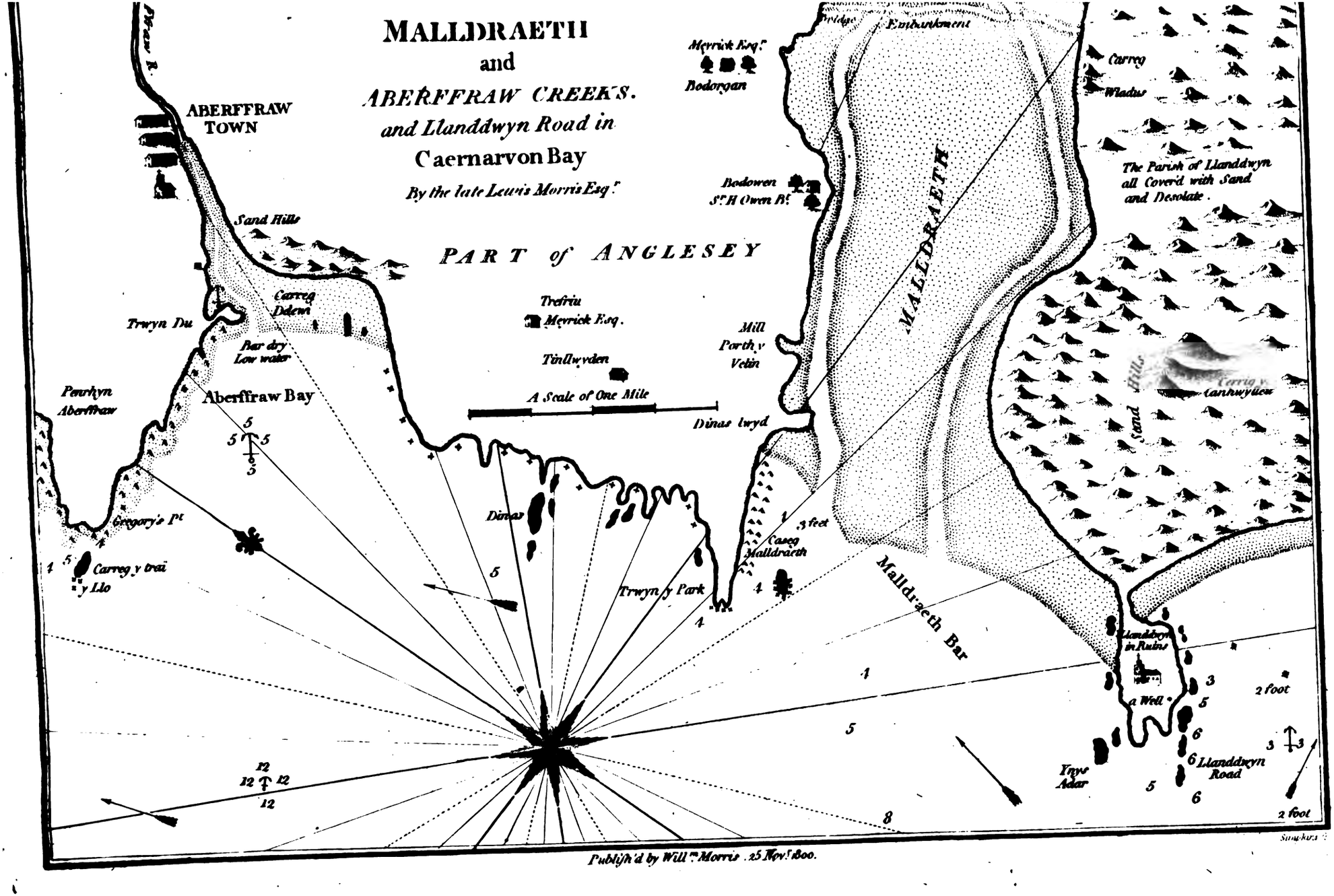
Publishd by Will.m Morris 25.th Nov.r 1800.

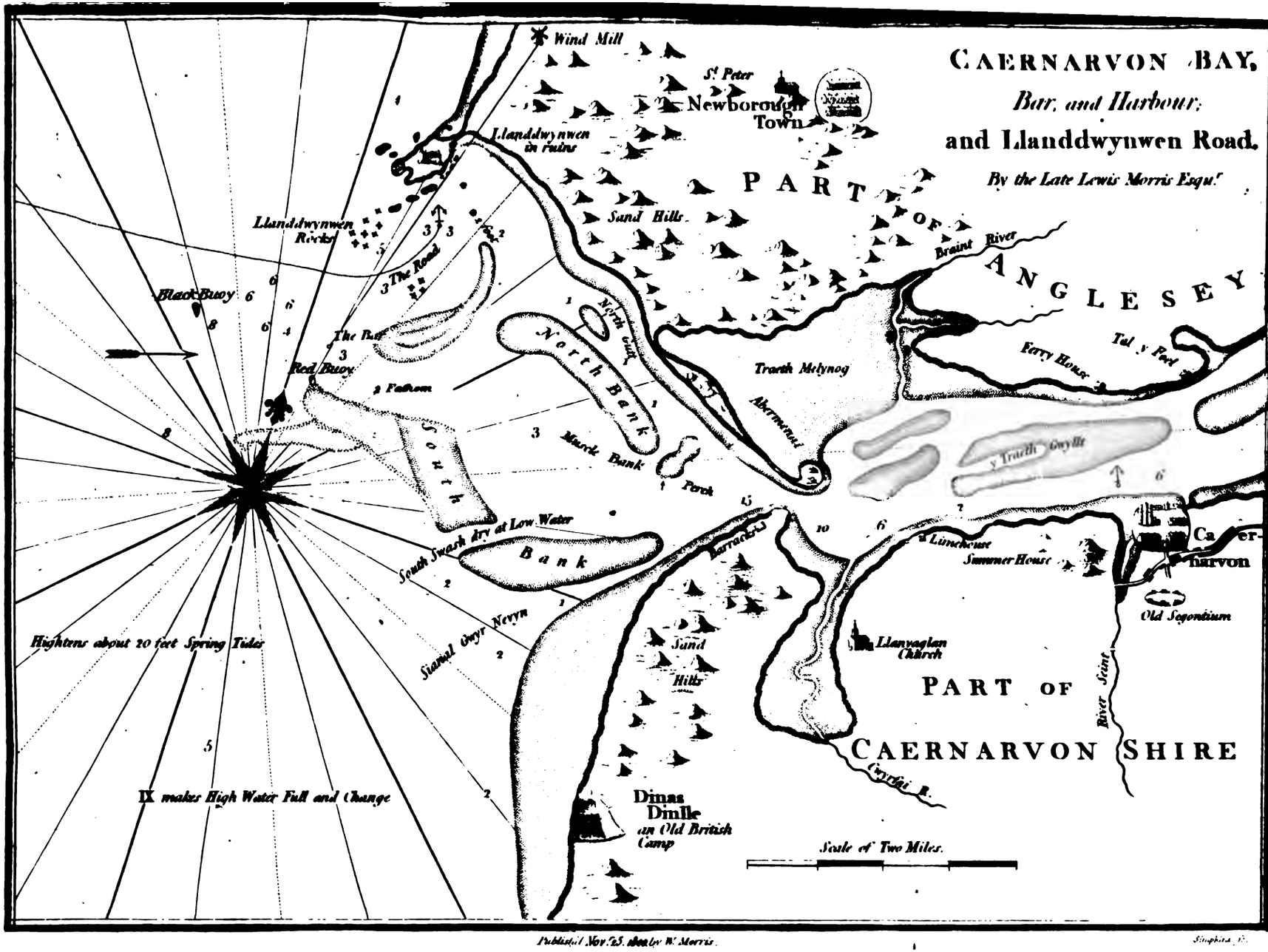
Simpkins fi



Published by Will.m Morris. 25.th Nov.r 1800.

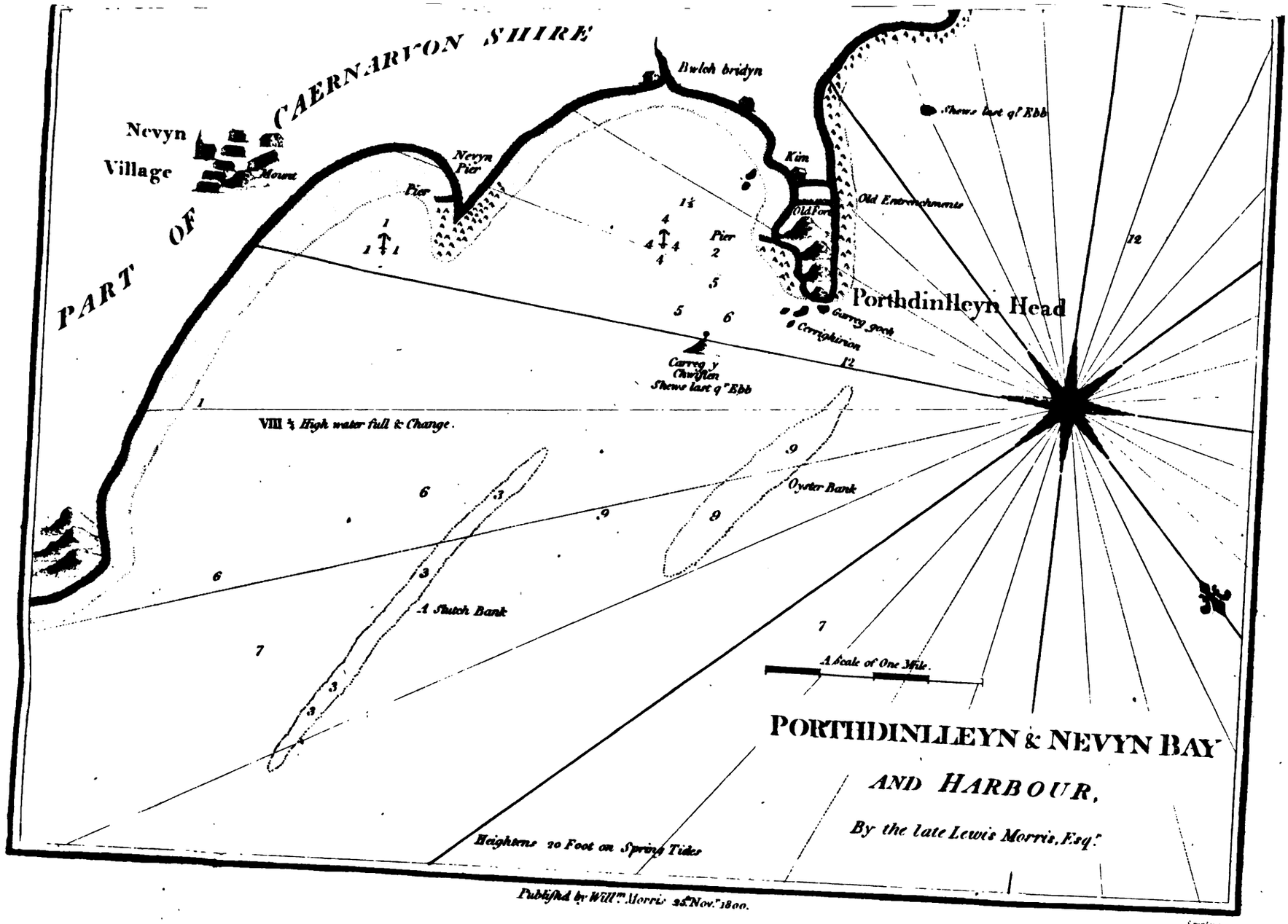
Singleton


MALLDRAETH
and
ABERFFRAW CREEKS.
and Llanddwyn Road in
Caernarvon Bay
By the late Lewis Morris Esq.r
ABERFFRAW TOWN
Sand Hills
Carreg Ddewn
Trwyn Du
Bar dry Low water
Aberffraw Bay
Penrhyn Aberffraw
Gregory's Pt
Carreg y trai
y Llo
PART of ANGLESEY
Trefriu
Merrick Esq.
Tinllwyden
A Scale of One Mile
Merrick Esq.r
Bodorgan
Bodowen
S.r H Owen Bt.
Mill
Parth y
Velin
Dinas Iwyd
Dinas
Trwyn y Park
Caseg Malldraeth
3 feet
MALLDRAETH
Malldraeth Bar
Bridge
Embankment
Carreg
Wladus
The Parish of Llanddwyn
all Coverd with Sand
and Desolate.
Sand Hills
Carreg y
Canhwylion
Llanddwyn
in Ruins
a Well
Ynys
Adar
Llanddwyn
Road
2 foot
2 foot
Publish'd by Will.m Morris . 25 Nov.r 1800.

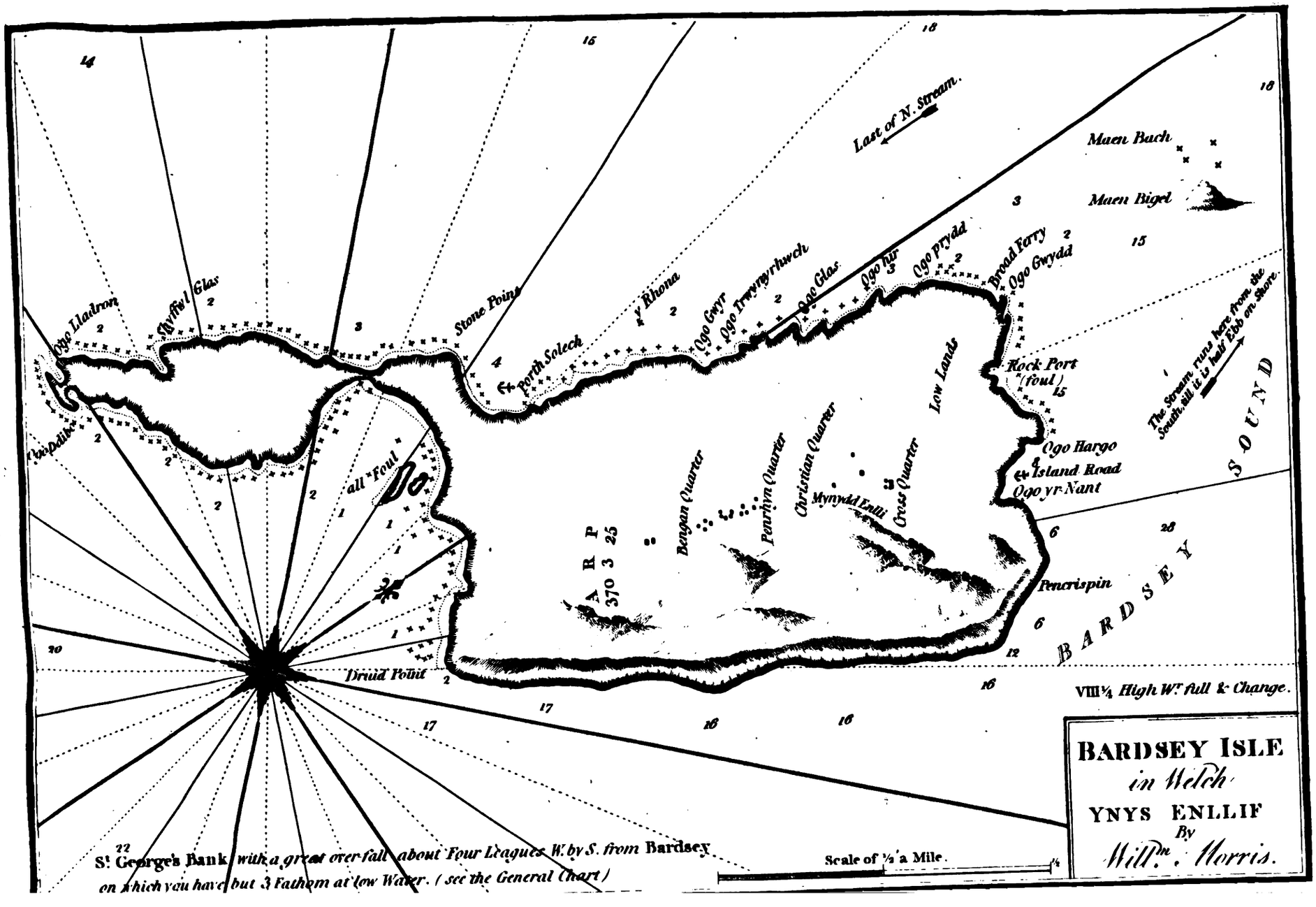


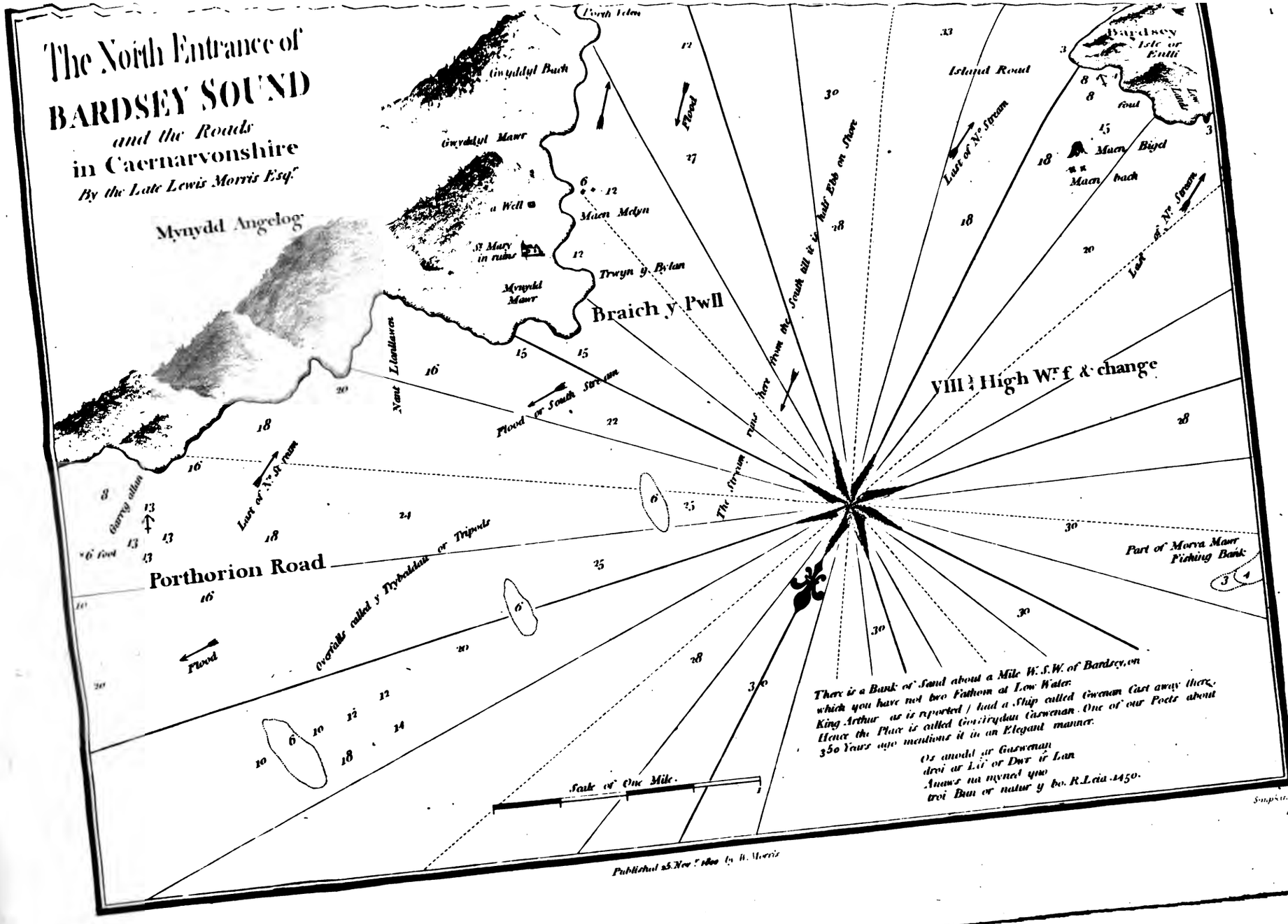
Published Nov.r 25. 1800 by W.m Morris.

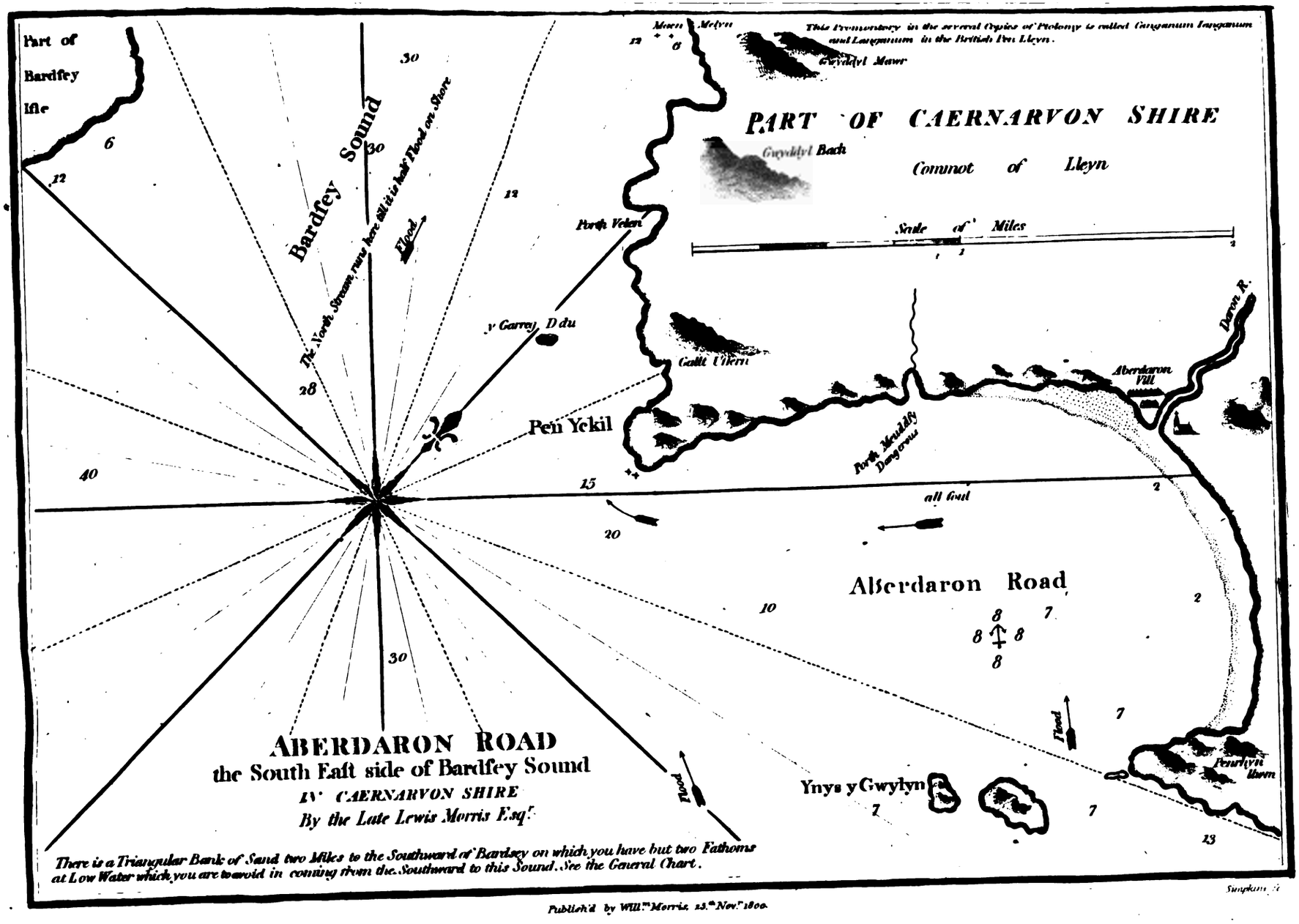
Simpkins sc.



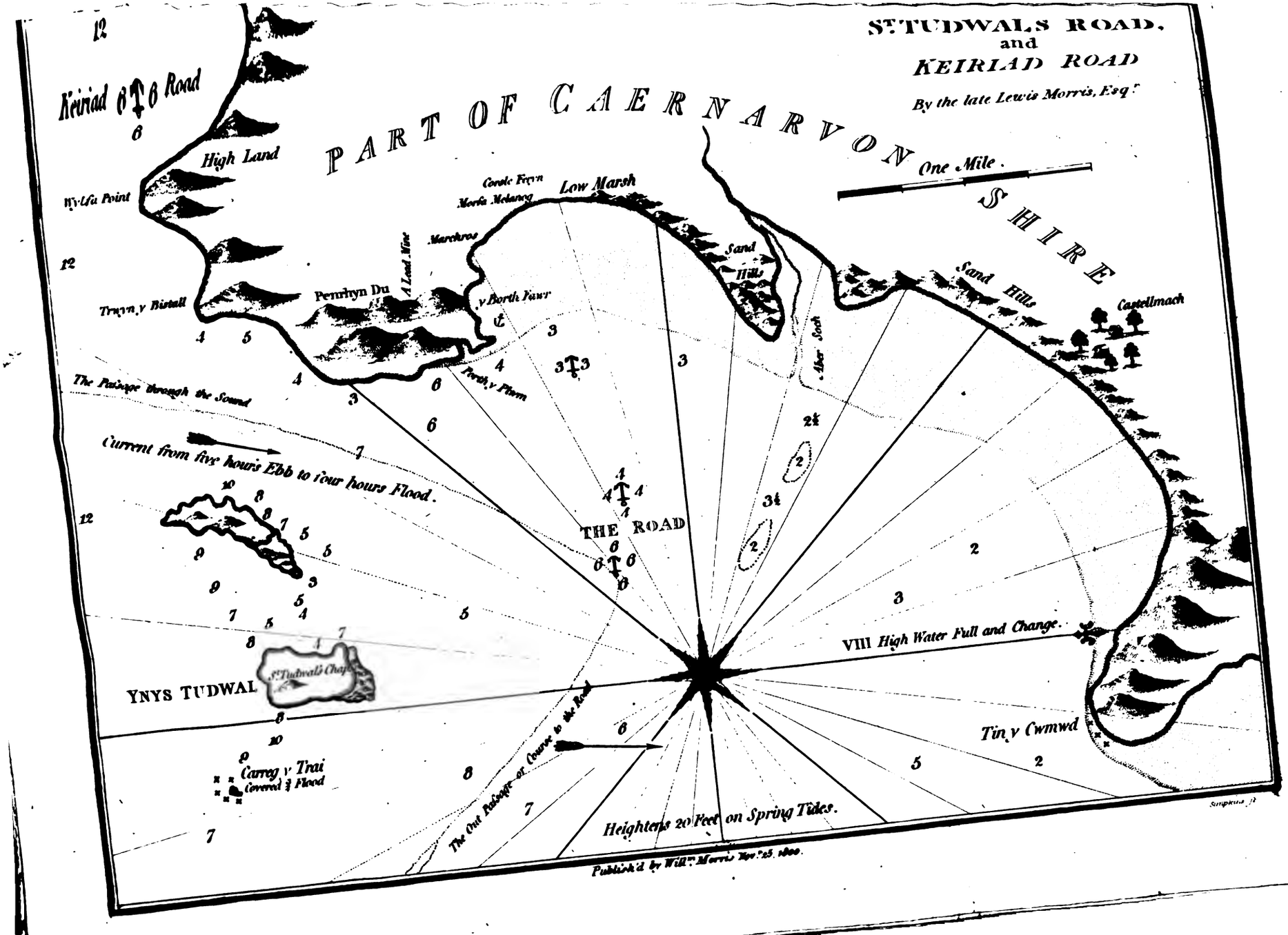
Published by Will.m Morris 25.th Nov.r 1800.


BARDSEY ISLE
in Welch
YNYS ENLLIF
By
Willm. Morris.
Scale of ½ a Mile.
St George's Bank with a great over-fall about Four Leagues W. by S. from Bardsey
on which you have but 3 Fathom at low Water. (see the General Chart)
VIII¼ High Wr full & Change.
BARDSEY SOUND
The Stream runs here from the South, till it is half Ebb on Shore.
Last of N. Stream.
Maen Bach
Maen Bigel
Broad Ferry
Ogo Gwydd
Ogo Prydd
Ogo Hir
Ogo Glas
Ogo Trwynyrhwch
Ogo Gwyr
y Rhona
Porth Solech
Stone Point
Ogo Lladron
Cyffel Glas
Porth Dilin
all Foul
Druid Point
Rock Port (foul)
Low Lands
Ogo Hargo
Island Road
Ogo yr Nant
Penrispin
Cross Quarter
Mynydd Enlli
Christian Quarter
Penrhyn Quarter
Bengan Quarter
ARP 370 3 25

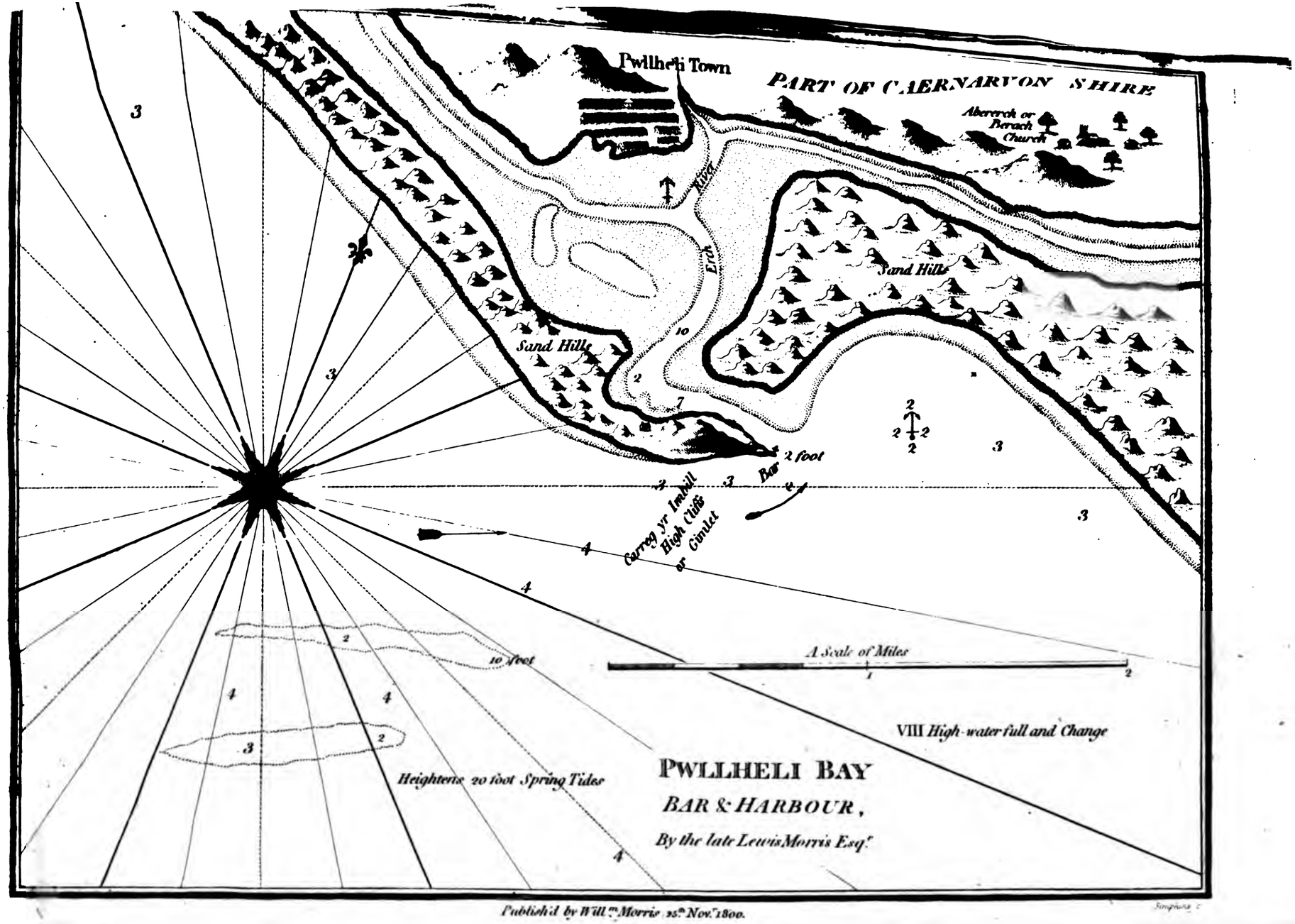

The North Entrance of
BARDSEY SOUND
and the Roads
in Caernarvonshire
By the Late Lewis Morris Esq.r
Mynydd Angelog
Gwyddyl Bach
Gwyddyl Mawr
a Well
St Mary in ruins
Mynydd Mawr
Porth Telen
Maen Melyn
Trwyn y Bylan
Braich y Pwll
Nant Llanllawen
Flood or South Stream
Last of N.r Stream
Garreg allan
Porthorion Road
Overfalls called y Trybeddau or Tripods
Flood
Scale of One Mile.
The Stream runs here from the South till it is half Ebb on Shore
Island Road
Last of N.r Stream
Bardsey Isle or Enlli
Low Land
foul
Maen Bigyd
Maen bach
Last of N.r Stream
VIII ¾ High W.r f & change
Part of Morra Mawr Fishing Bank
There is a Bank of Sand about a Mile W.S.W. of Bardsey, on which you have not two Fathom at Low Water.
King Arthur as is reported / had a Ship called Gwenan Cast away there.
Hence the Place is called Gorfrydau Gaswenan. One of our Poets about 350 Years ago mentions it in an Elegant manner.
Os amodd ar Gaswenan
drei ar Lif or Dwr ir Lan
Anawes na myned yno
trei Bun or natur y bo. R. Leia 1450.
Published 25 Nov.r 1800 by R. Morris



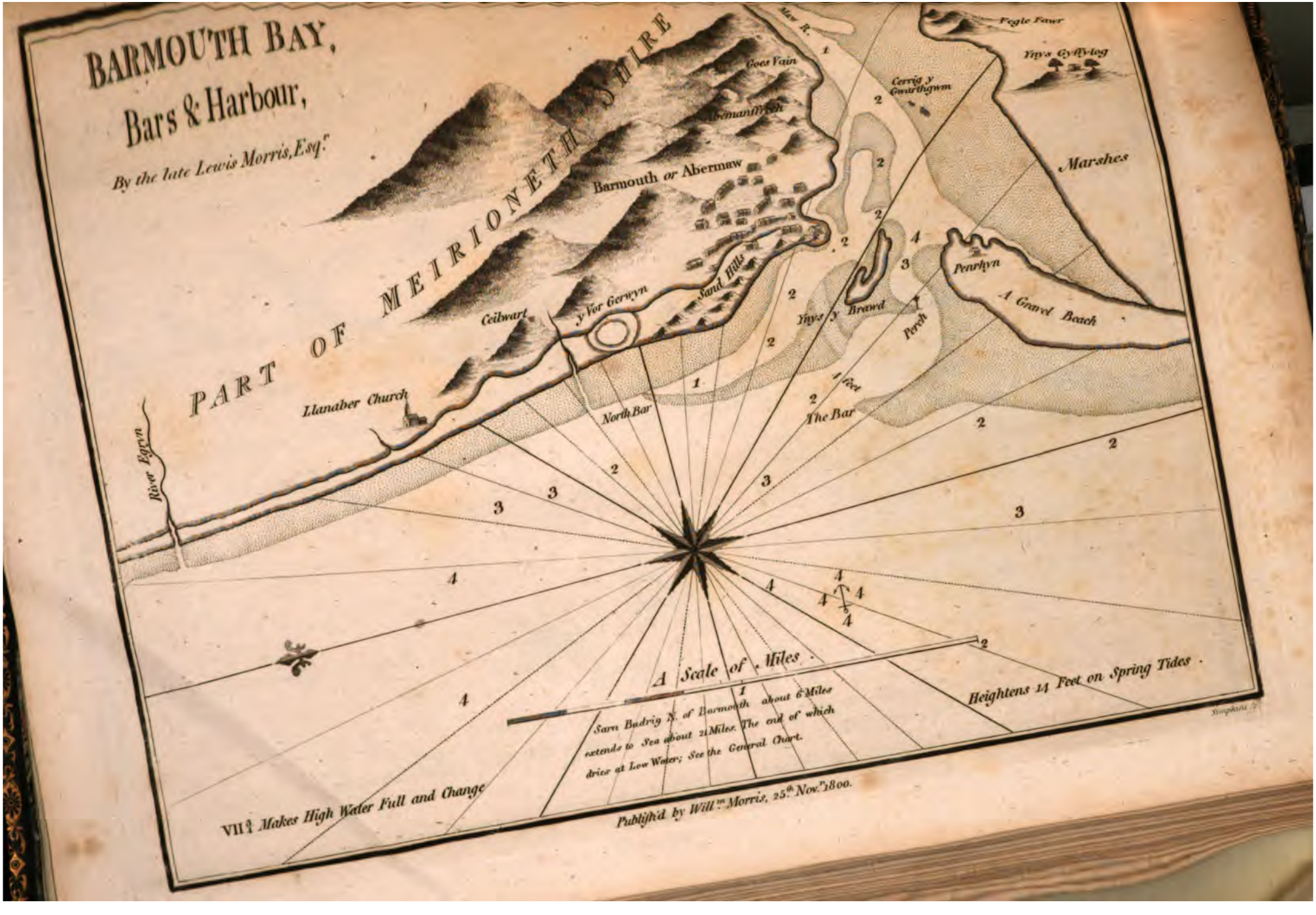
Published by Will.m Morris 25.th Nov.r 1800.

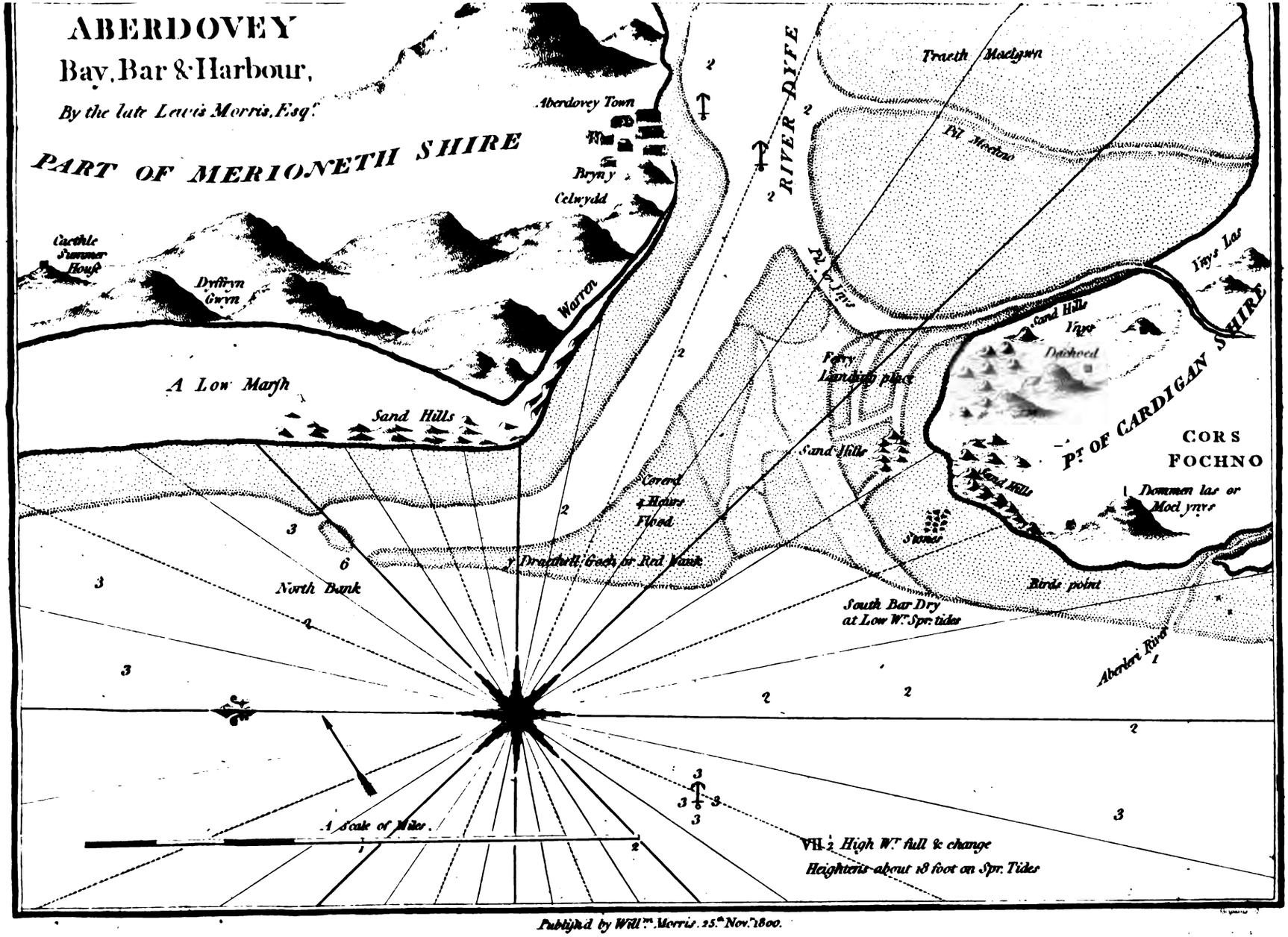


Publish'd by Wm. Morris Nov.r 25. 1800.



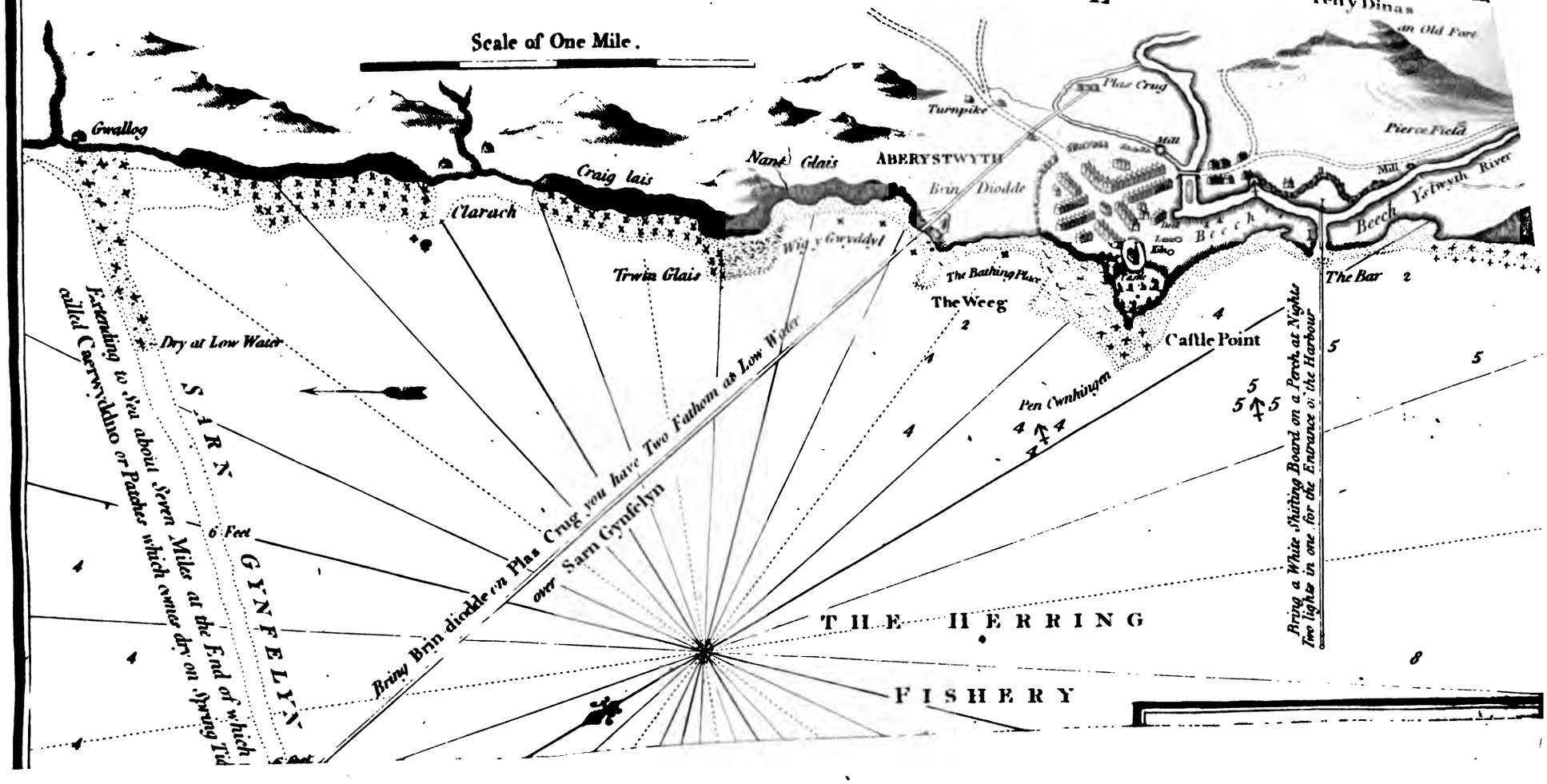
Published by Wm. Morris 25th Nov. 1800.

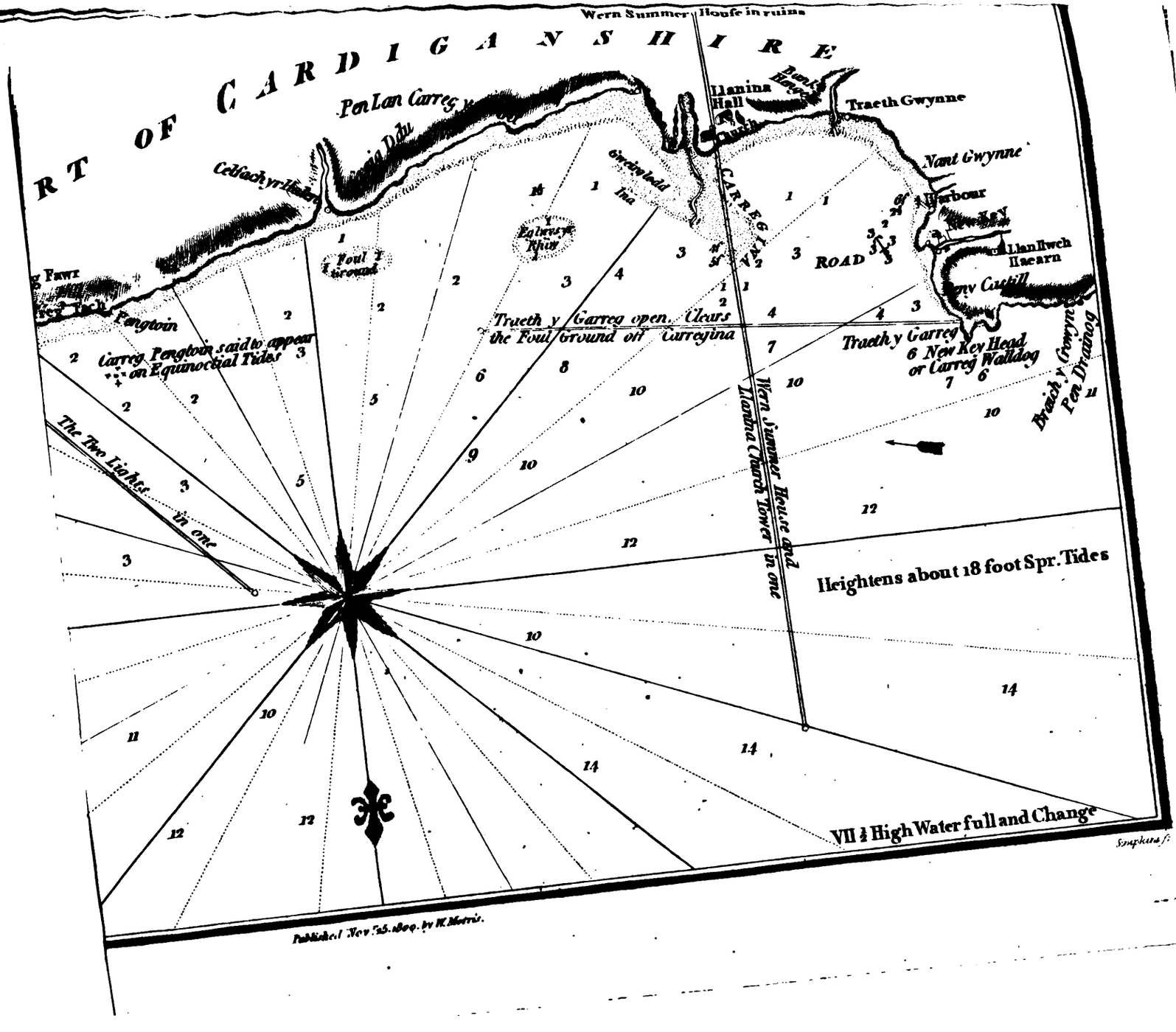

BARMOUTH BAY,
Bars & Harbour,
By the late Lewis Morris, Esq.r
PART OF MEIRIONETHSHIRE
Mar R.
Goes Vain
Cerrig y Gwarthgwm
Fegle Fawr
Ynys Gyllylog
Marshes
Barmouth or Abermaw
Sand Hills
Ceibwart
y Ver Gerwyn
Llanaber Church
River Egryn
North Bar
Ynys y Brawd
Perch
Penrhyn
A Gravel Beach
1 Feet
The Bar
A Scale of Miles
Sarn Badrig N. of Barmouth about 6 Miles extends to Sea about 21 Miles. The end of which dries at Low Water; See the General Chart.
Heightens 14 Feet on Spring Tides
VIIs Makes High Water Full and Change
Publish'd by Will.m Morris, 25.th Nov.r 1800.

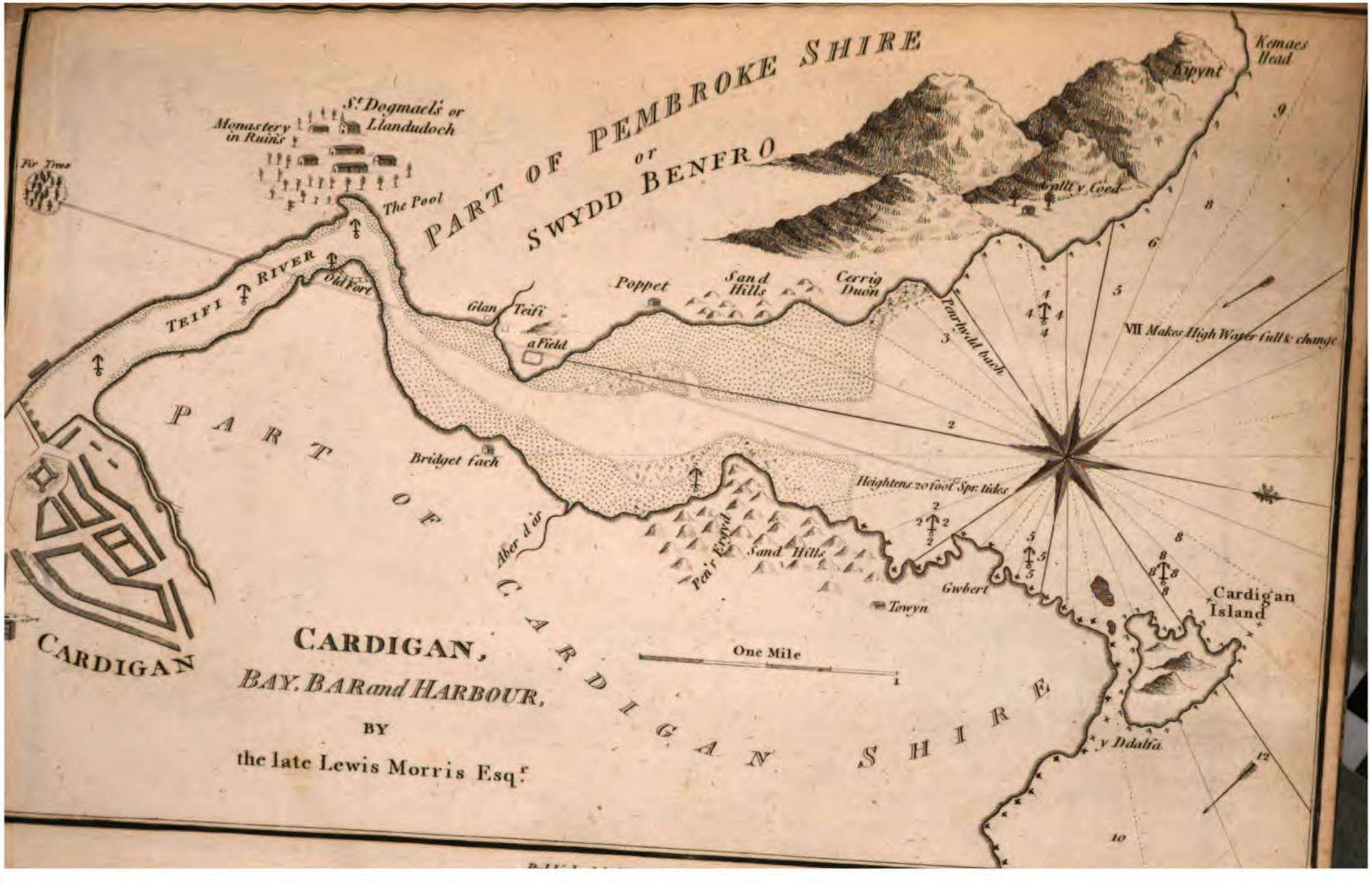


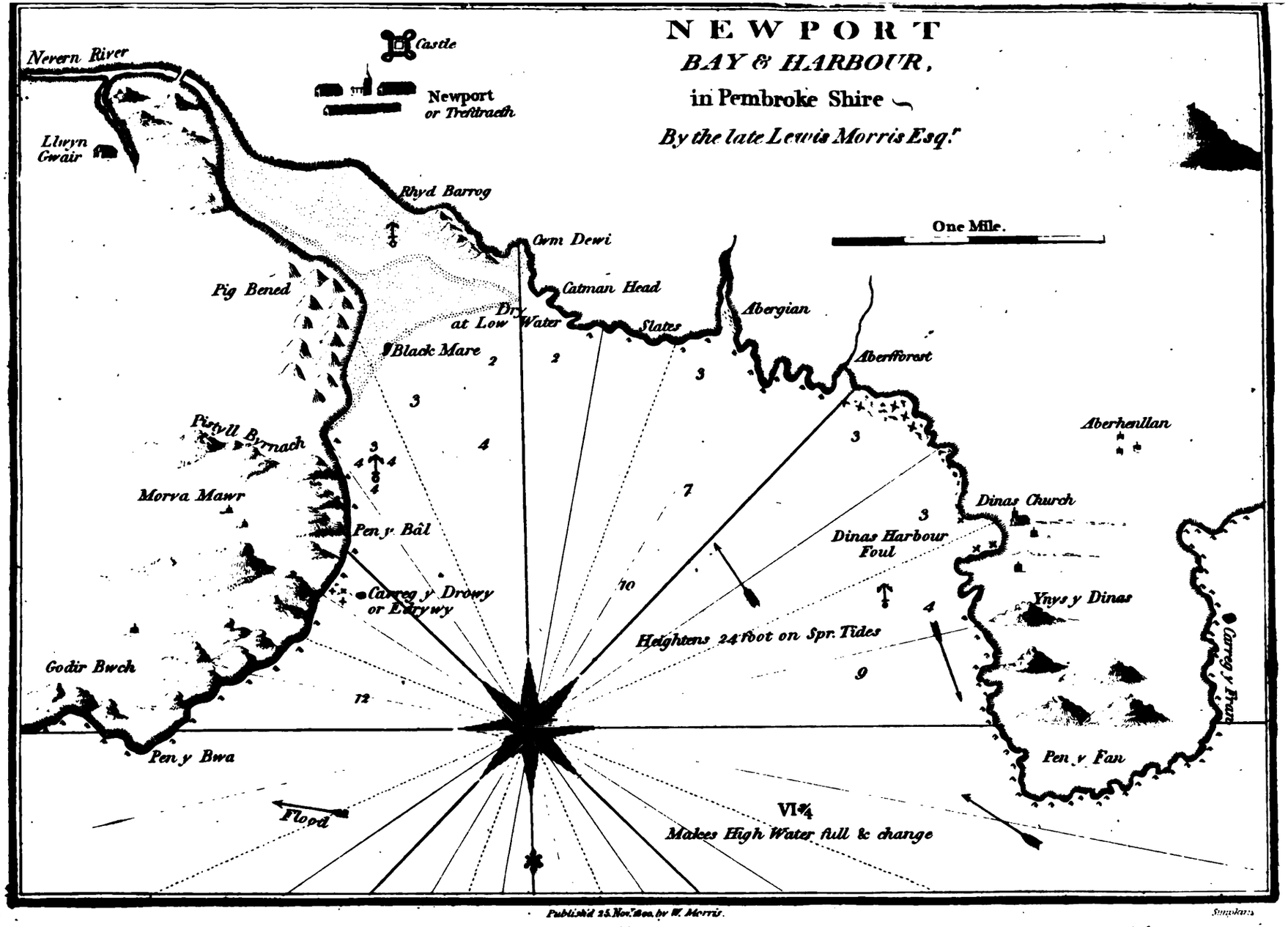
Published by Wm. Morris. 25th Nov. 1800.

PART OF CARDIGAN SHIRE




Wern Summer House in ruins
RT OF CARDIGANSHIRE
Pen Lan Carreg
Celliachyrlhan
Llanina Hall
Church
Traeth Gwynne
Nant Gwynne
Harbour
Llanllwch Hearn
Castill
ROAD
Foul Ground
Eglwys Rhiw
Fawr
Pen Tach
Pengtoin
Carreg Pengtoin said to appear on Equinoctial Tides
Traeth y Garreg open. Clears the Foul Ground off Carreginina
Wern Summer House and Llanina Church Tower in one
Traeth y Garreg
6 New Key Head or Carreg Walldog
Braich y Gwynn
Pen Drainog
The Two Lights in one
Heightens about 18 foot Spr. Tides
VII ½ High Water full and Change
Published Nov. 25. 1809. by W. Morris.


CARDIGAN,
BAY, BAR and HARBOUR,
BY
the late Lewis Morris Esq.r
PART OF PEMBROKE SHIRE
or
SWYDD BENFRO
PART OF CARDIGAN SHIRE
CARDIGAN
Monastery in Ruins
St. Dogmaels or Llandudoch
Fir Trees
The Pool
TEIFI RIVER
Old Fort
Glan Teifi
a Field
Poppet
Sand Hills
Cerrig Duon
Penrhydd bach
Bridget fach
Aber d'or
Tan'r Eryd
Sand Hills
Heightens 20 foot Spr. tides
Gwbert
Towyn
One Mile
Cnllt y Coed
Kemaes Head
Dipynt
VII Makes High Water full & change
Cardigan Island
y Ddalfa

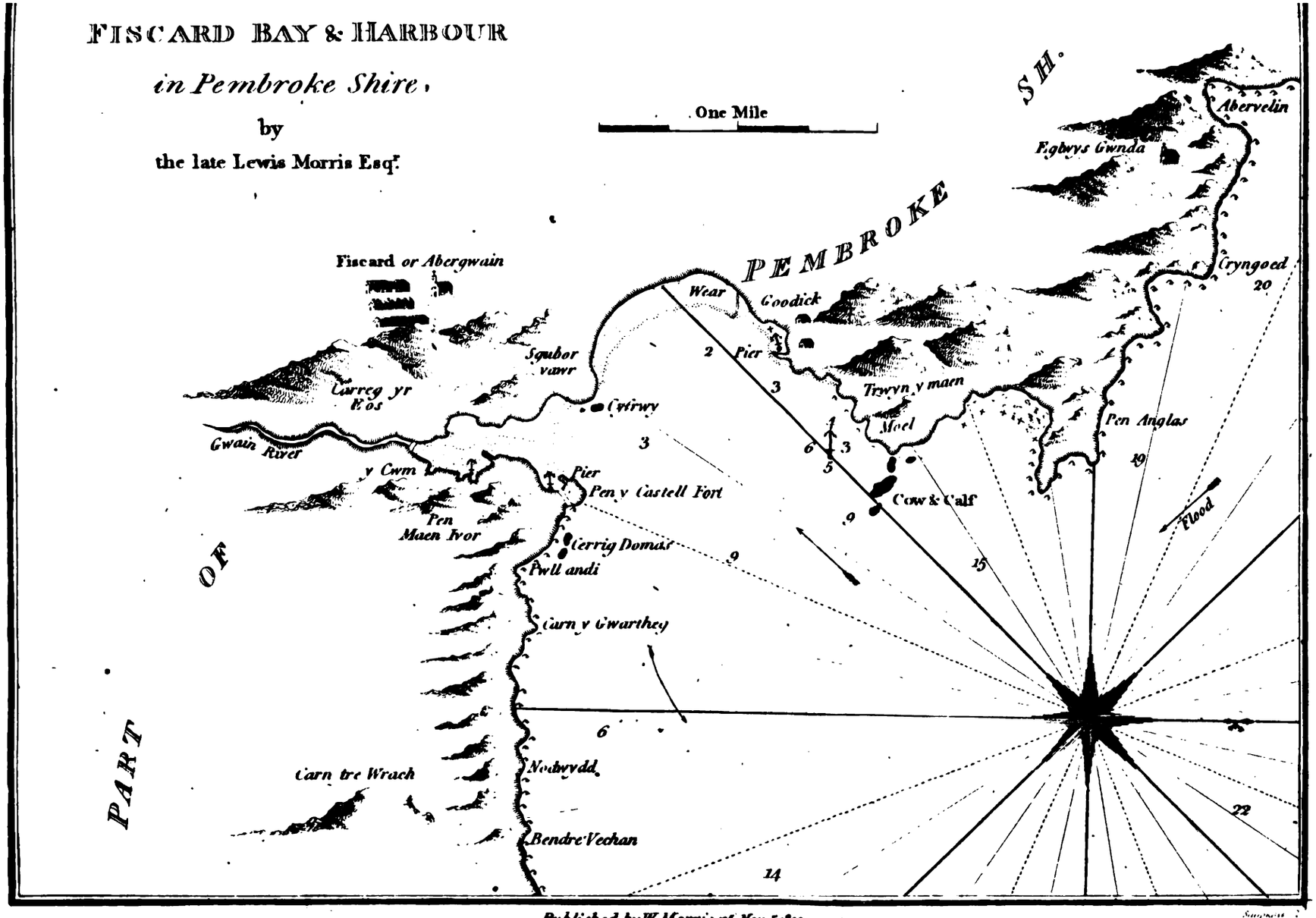

NEWPORT
BAY & HARBOUR,
in Pembroke Shire
By the late Lewis Morris Esq.r
Castle
Newport
or Trefdraeth
Nevern River
Llwyn
Gwair
Rhyd Barrog
Cwm Dewi
Catman Head
Dry
at Low Water
Slates
Abergian
Aberfforest
One Mile.
Pig Bened
Black Mare
Pistyll Brynach
Morva Mawr
Pen y Bâl
Carreg y Drowy
or Ellrywy
Godir Bwch
Pen y Bwa
Flood
Aberhenllan
Dinas Church
Dinas Harbour
Foul
Ynys y Dinas
Heightens 24 foot on Spr. Tides
Carreg y Fran
Pen y Fan
VI.4
Makes High Water full & change
Published 25 Nov.r 1800 by W. Morris.
Sympkins

FISCARD BAY & HARBOUR

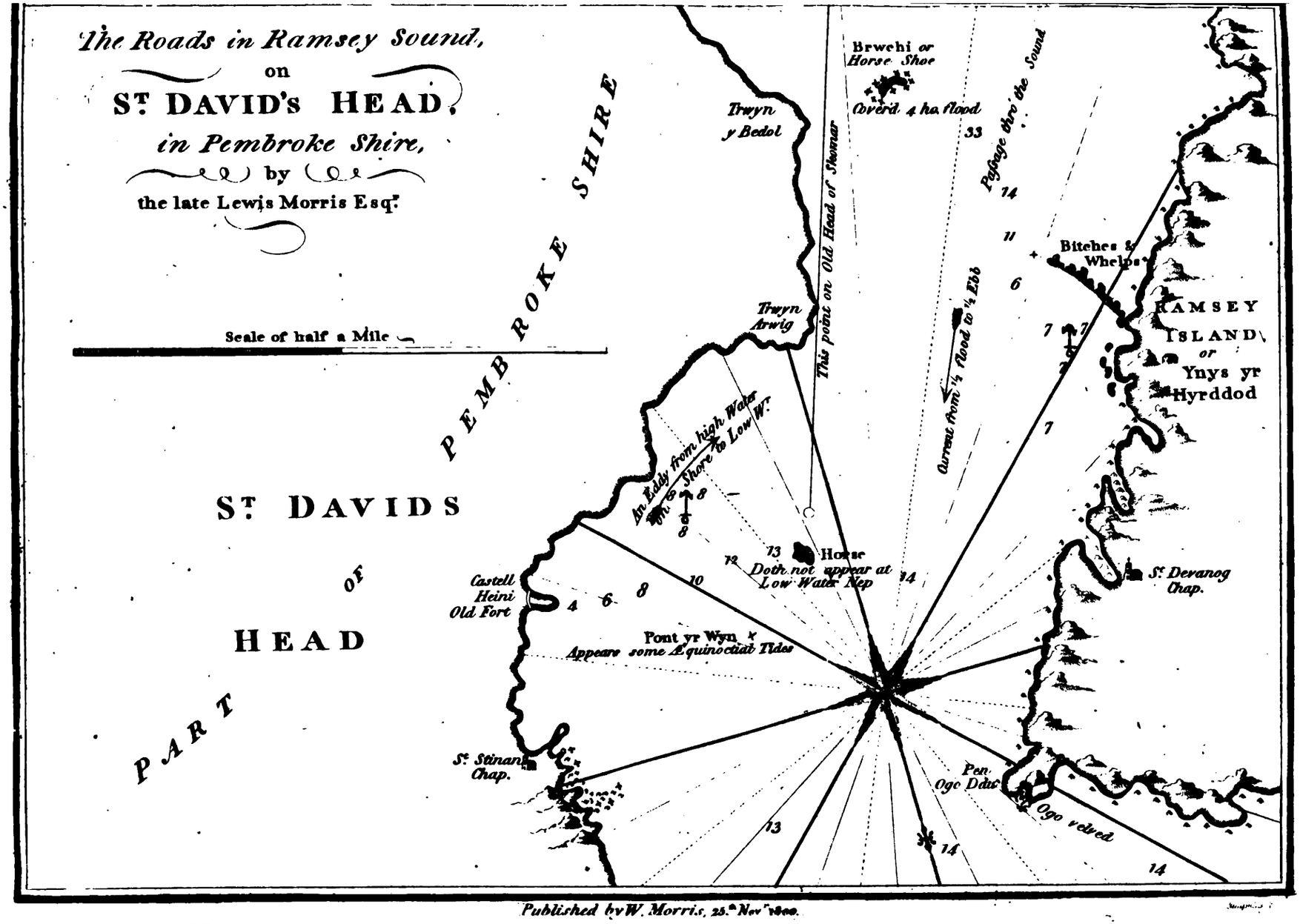
in Pembroke Shire,

by

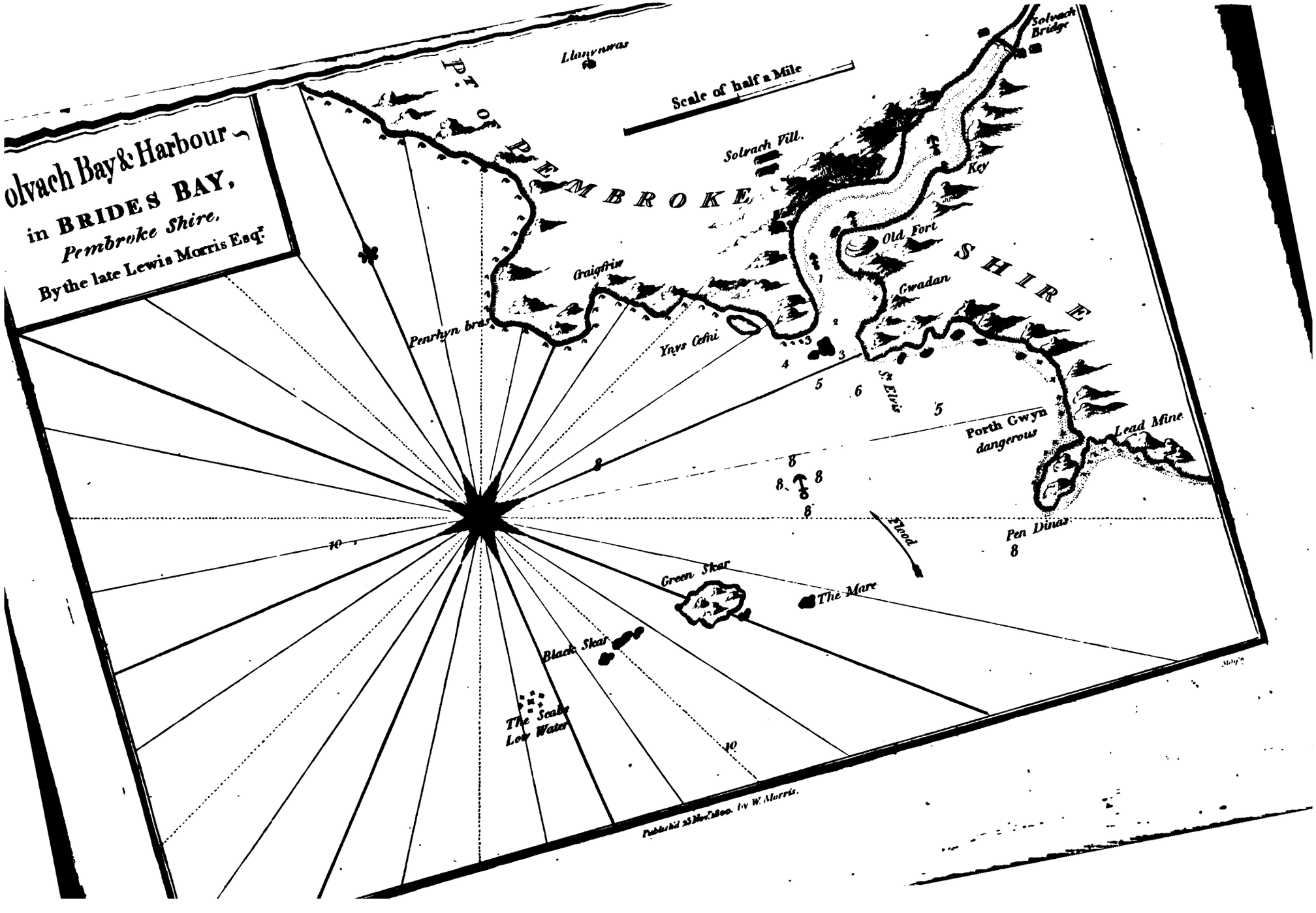
the late Lewis Morris Esq.

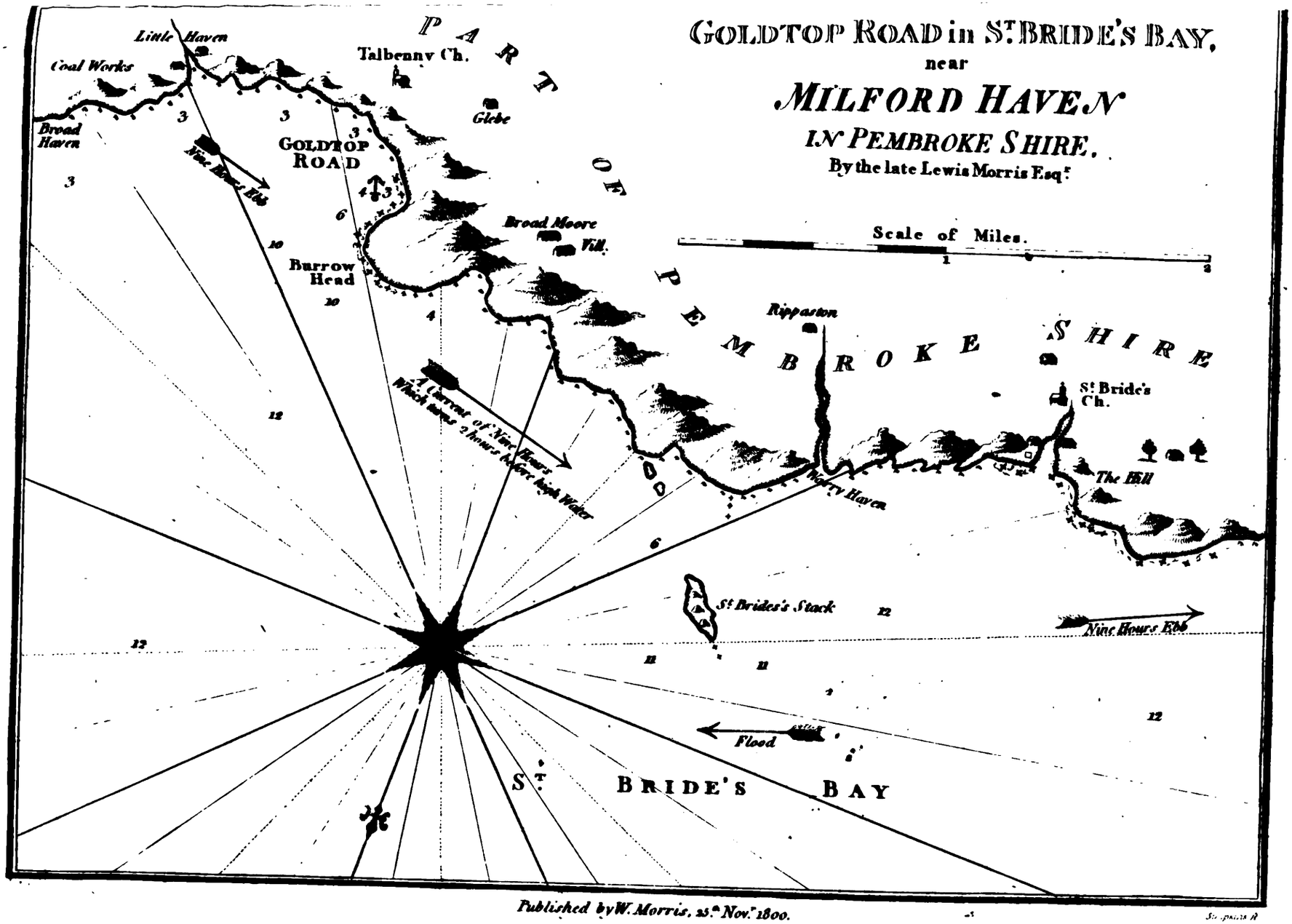


Published by W. Morris 26 Nov.r 1800.

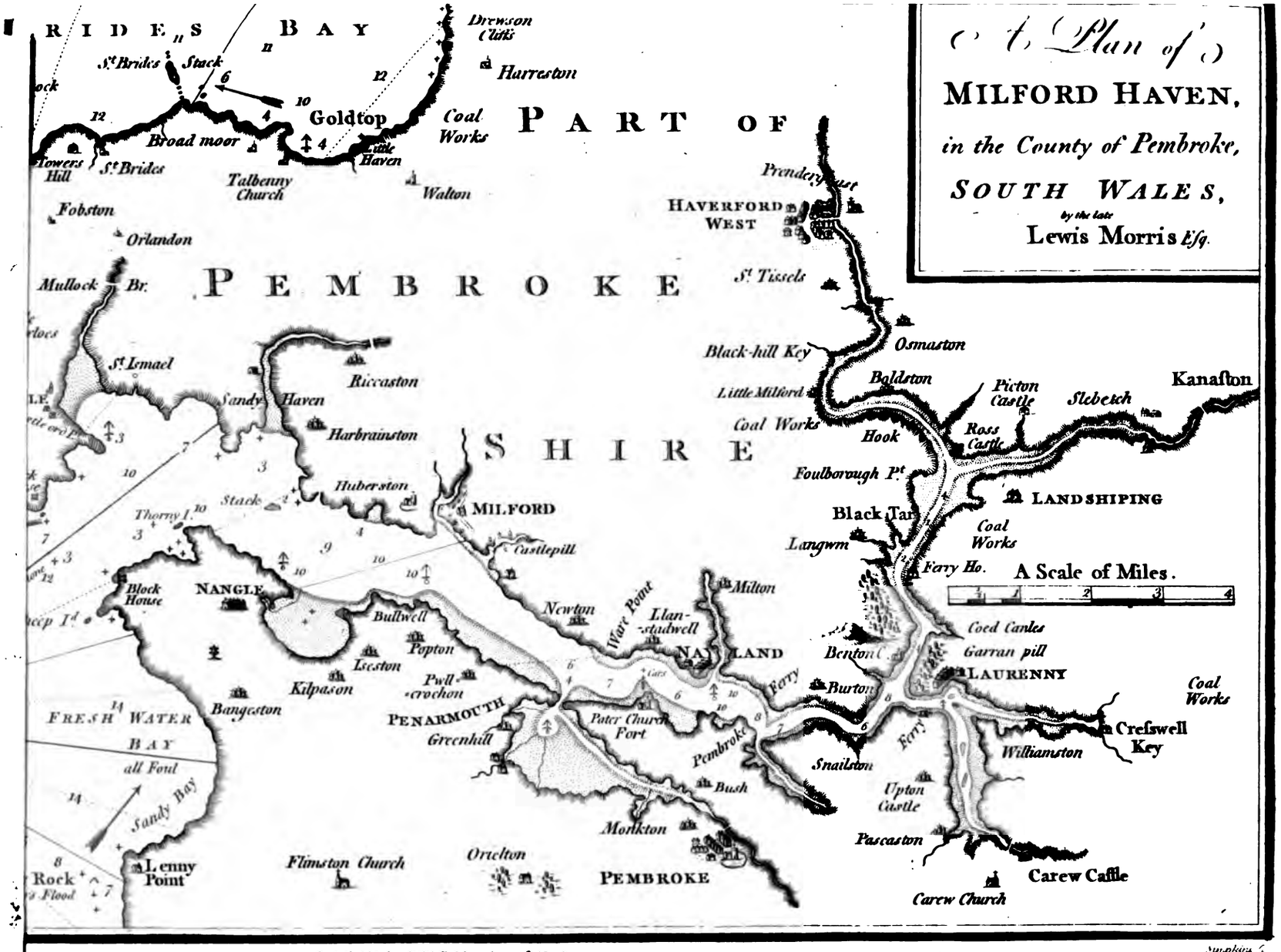


Published by W. Morris, 25th Nov. 1800.


olvach Bay & Harbour
in BRIDES BAY,
Pembroke Shire,
By the late Lewis Morris Esq.
Scale of half a Mile
Llanrhwas
Solvach Bridge
Solvach Vill.
Key
Old Fort
Gwadan
Graigfrin
Penrhyn bras
Ynys Cefni
St Elvis
Porth Gwyn
dangerous
Lead Mine
Pen Dinas
Flood
Green Skear
The Mare
Black Skear
The Scaly
Low Water
PEMBROKE
SHIRE
Published 25 Nov. 1800. by W. Morris.

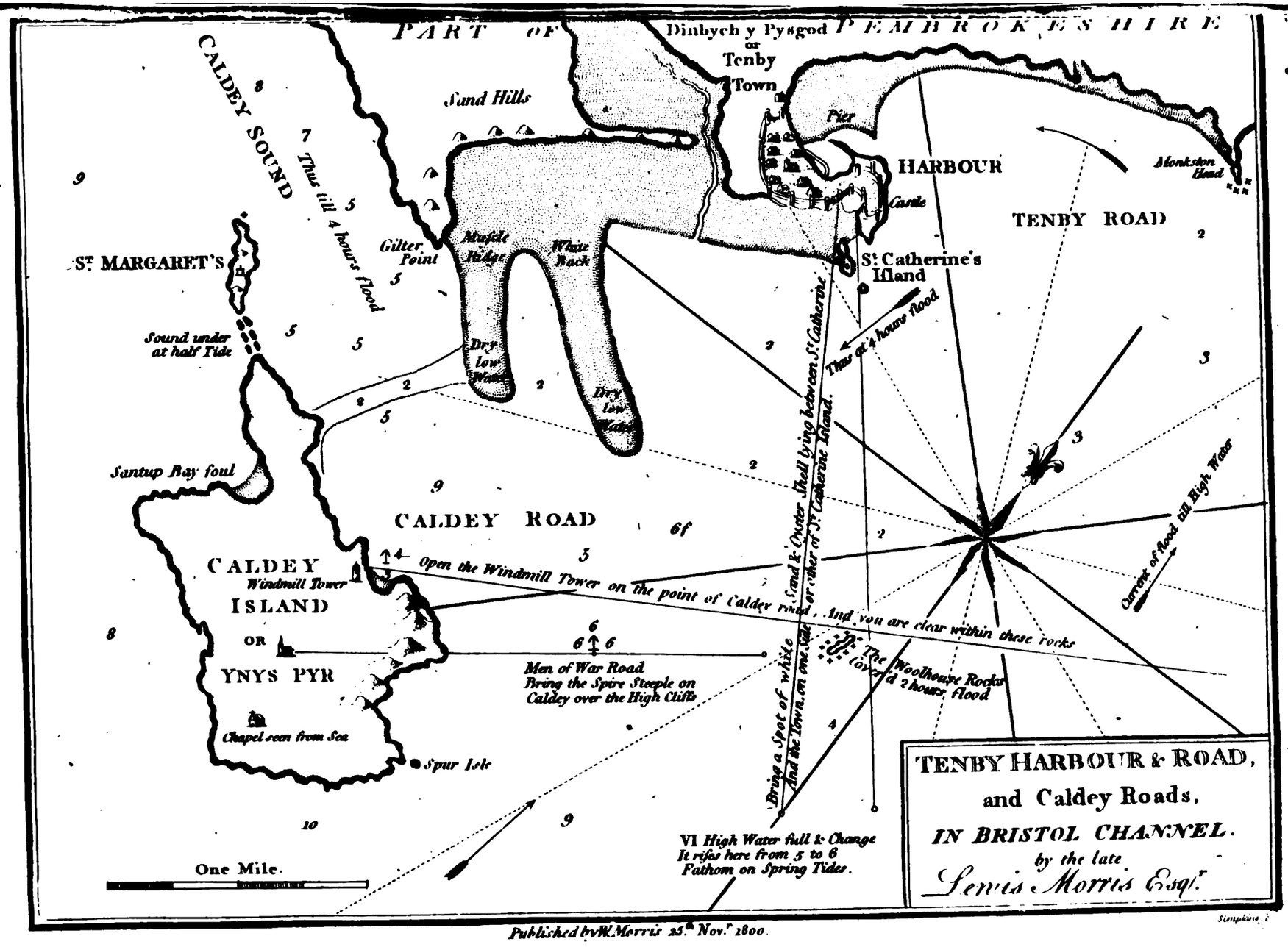


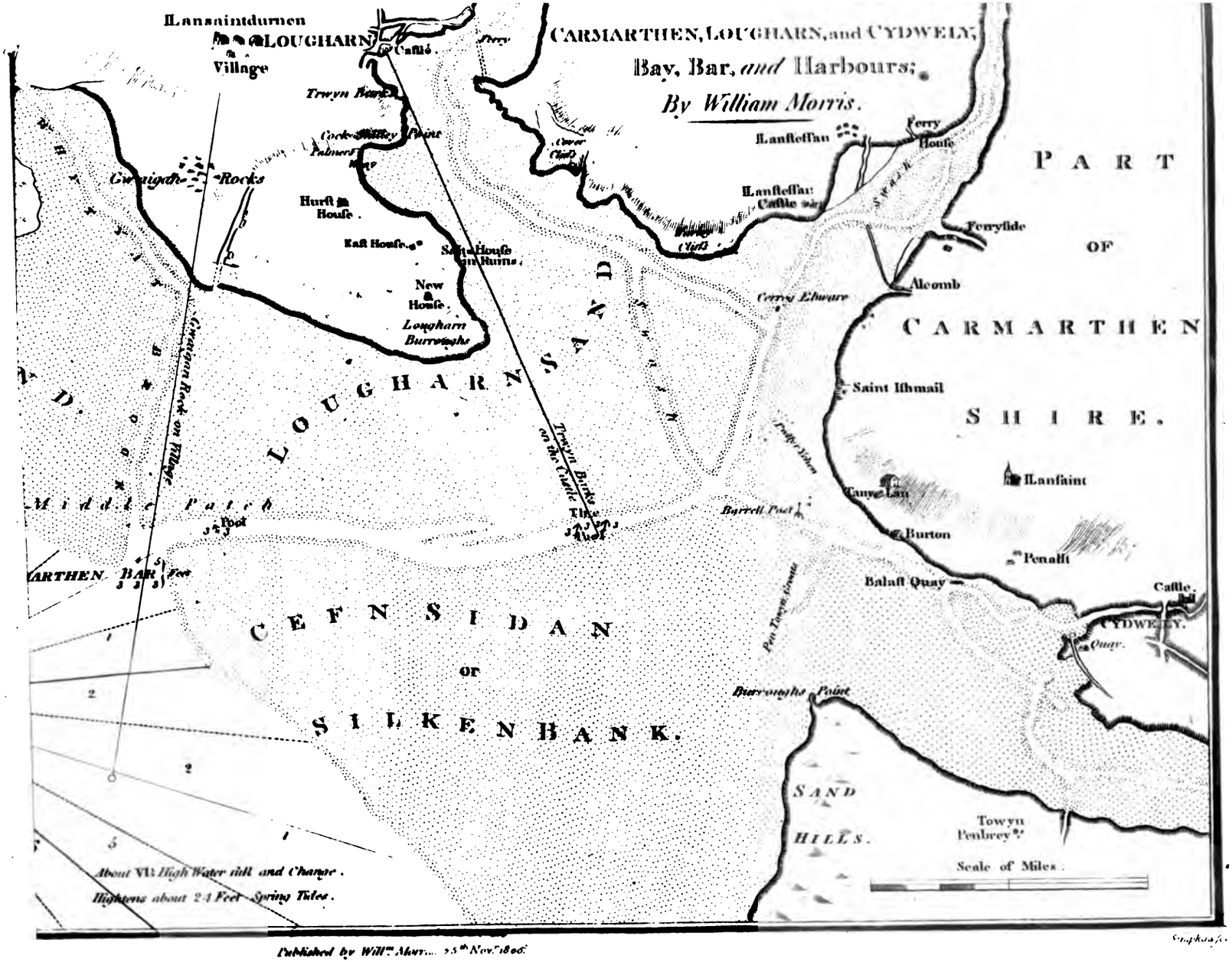
Published by W. Morris, 25th Nov. 1800.



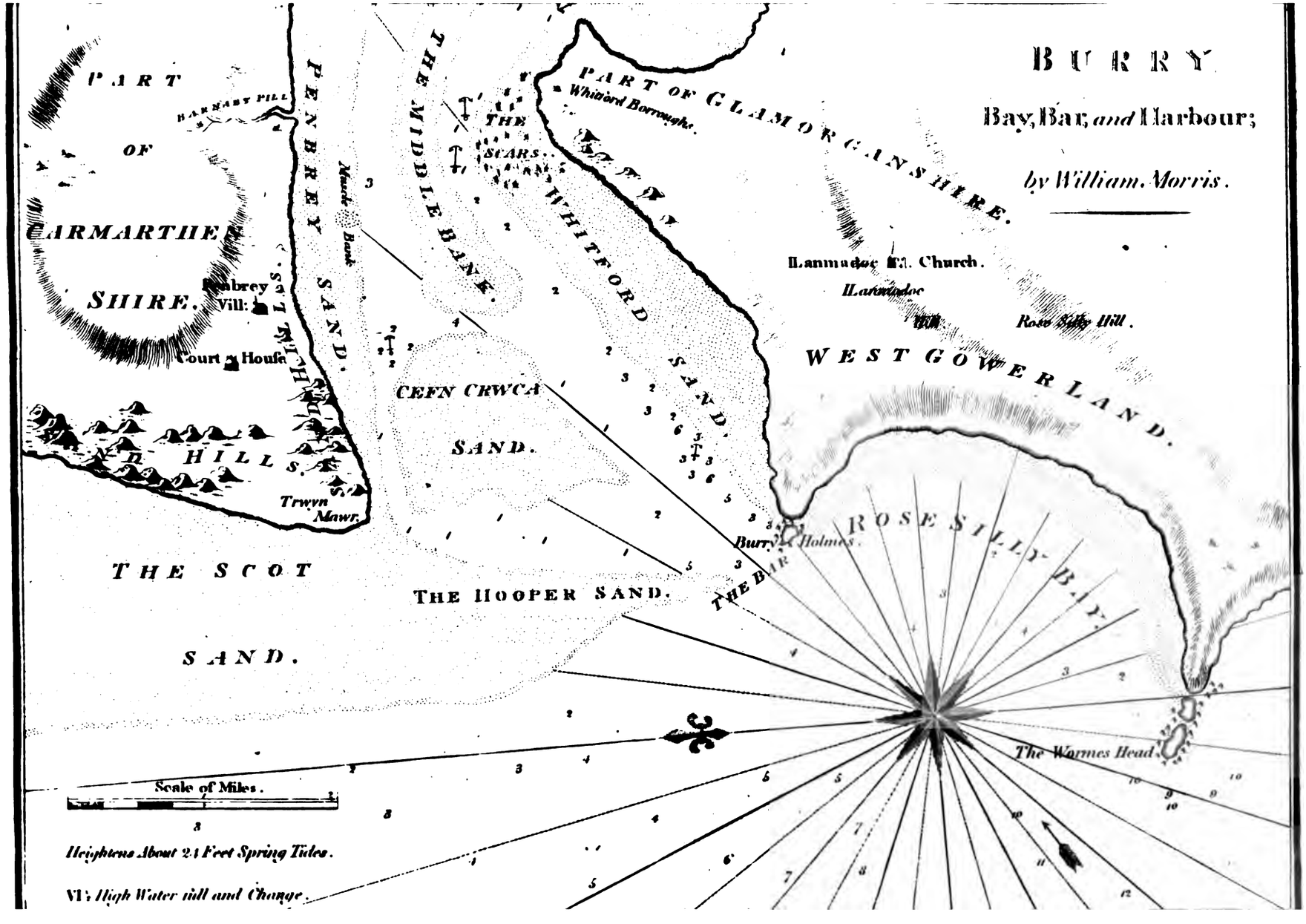
Published by Wm. Morris, 25th Nov. 1800.

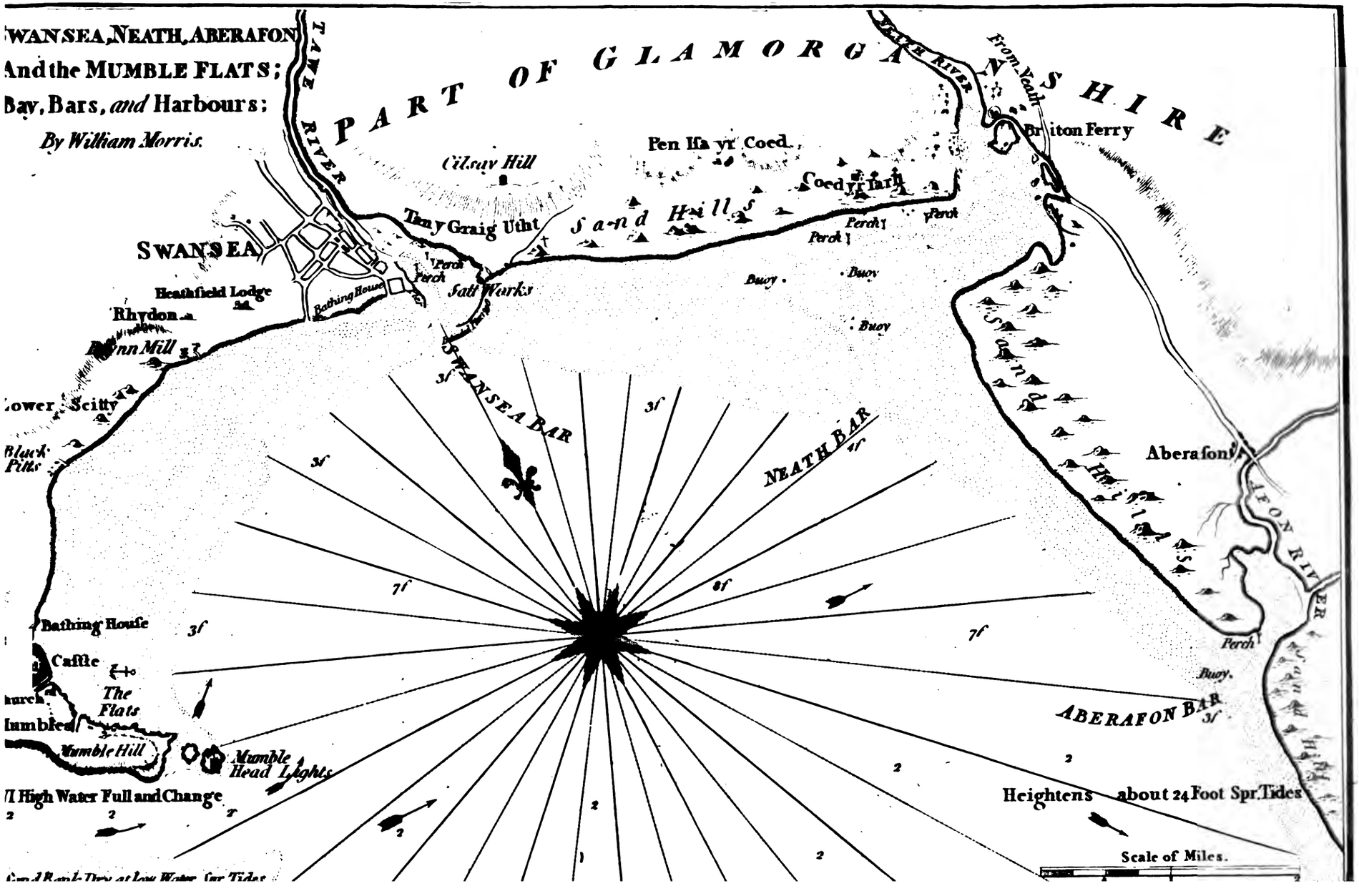
Simpkin, S.


PART OF PEMBROKESHIRE
Dinbych y Pysgod or Tenby Town
Sand Hills
Pier
HARBOUR
Castle
Monkston Head
TENBY ROAD
St Catherine's Island
CALDEY SOUND
Thus till 4 hours flood
St MARGARET'S
Gilter Point
Muscle Ridge
White Rock
Dry low water
Dry low water
Sound under at half Tide
Santup Bay foul
CALDEY ROAD
Open the Windmill Tower on the point of Calder rind, And you are clear within these rocks
CALDEY ISLAND
Windmill Tower
OR
YNYS PYR
Chapel seen from Sea
Spur Isle
Men of War Road
Bring the Spire Steeple on Caldey over the High Cliffs
Bring a Spot of white Sand & Oyster Shell lying between St Catherine and the Town, on one side or other of St Catherine Island.
Thus at 4 hours flood
The Woolhouse Rocks (over) 2 hours flood
Current of flood till High Water
VI High Water full & Change
It rises here from 5 to 6 Fathom on Spring Tides.
One Mile.
TENBY HARBOUR & ROAD, and Caldey Roads, IN BRISTOL CHANNEL. by the late Lewis Morris Esq.r
Published by W. Morris 25th Nov.r 1800.
Simpkins

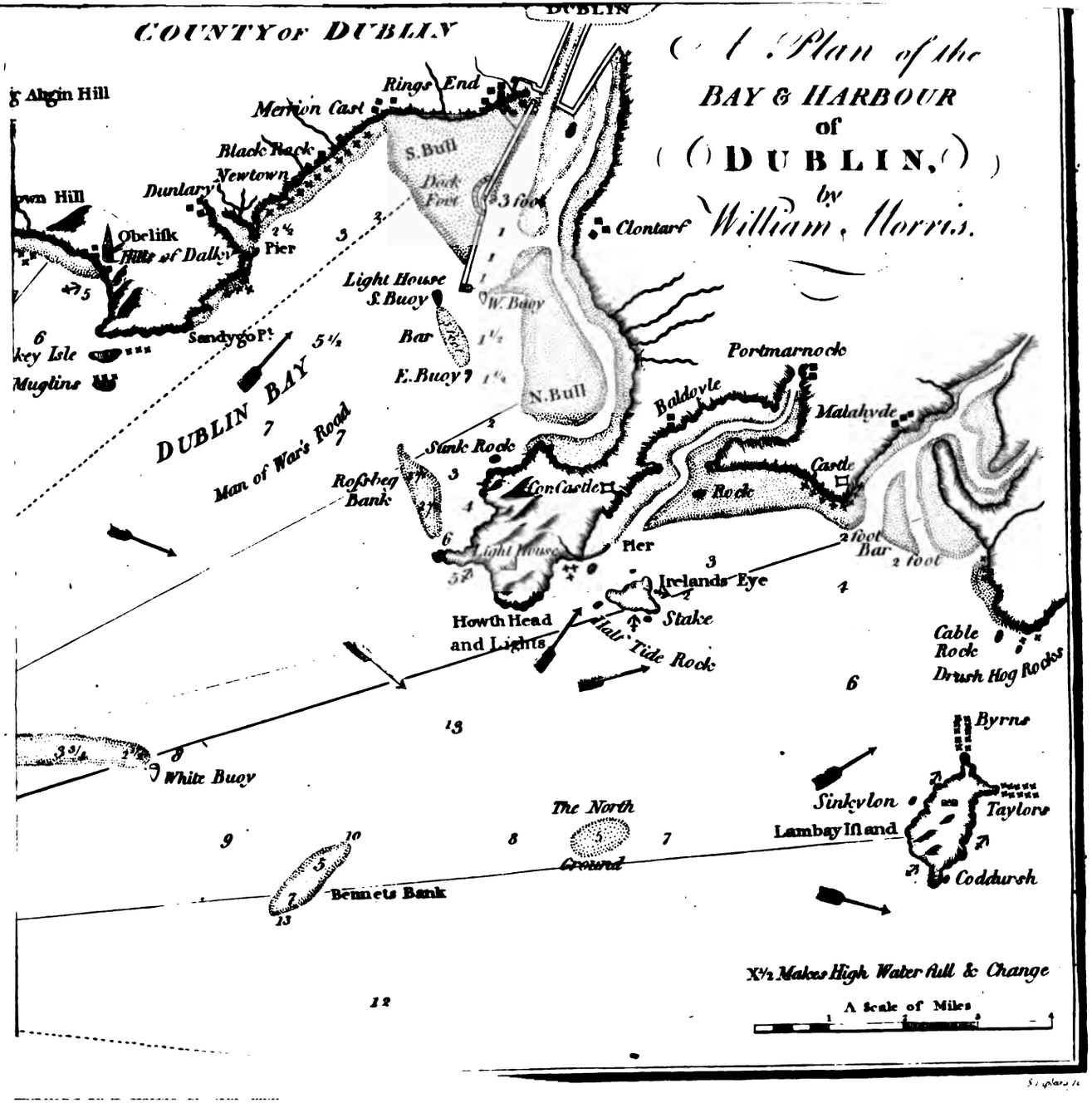


Published by Wm. Morris ... 25th Nov. 1806.


BURRY
Bay, Bar, and Harbour;
by William Morris.
PART OF CARMARTHENSHIRE.
BARNABY PILL
Penbrey Vill:
Court House
PENBREY SAND.
Mawr Bank
THE MIDDLE BANK.
THE SCARS.
PART OF GLAMORGANSHIRE.
Whitford Borroughs.
WHITFORD SAND.
Llanmadoc Ch. Church.
Llanmadoc
Rose Silly Hill.
WEST GOWERLAND.
CEFN CRWCA SAND.
Trwyn Mawr.
Burry Holmes.
THE BAR
ROSE SILLY BAY.
THE SCOT SAND.
THE HOOPER SAND.
The Wormes Head.
Scale of Miles.
Heightens About 24 Feet Spring Tides.
N.B. High Water full and Change.


SWANSEA, NEATH, ABERAFON
And the MUMBLE FLATS;
Bay, Bars, and Harbours;
By William Morris.
PART OF GLAMORGANSHIRE
TAWE RIVER
NEATH RIVER
From Neath
Briton Ferry
Pen Ifa yr Coed
Cilsay Hill
Coed yr Iarth
Tenny Graig Uthi
Sand Hills
Perch
Buoy
SWANSEA
Heathfield Lodge
Rhydon
Bathing House
Salt Works
Lower Scitty
Black Pits
SWANSEA BAR
NEATH BAR
Aberafon
AFON RIVER
Bathing House
Castle
The Flats
Mumble Hill
Mumble Head Lights
ABERAFON BAR
High Water Full and Change
Heightens about 24 Foot Spr. Tides
Scale of Miles.

the Great Sugar Loaf



OBSERVATIONS;

WITH

SOME ACCOUNT OF THE NATURAL PRODUCTIONS OF THE HARBOURS, &c.

LIVERPOOL, HOYLAKE, and CHESTER HARBOURS.

VESSELS inward-bound to Liverpool, not having Tide Tables (which are publiſhed at Liverpool yearly) muſt obſerve that it is high water among the banks, at full and change, about half-paſt ten o'clock, and riſes about 26 feet; and on the quarters about four and riſes about 14 feet; and that all the can-end buoys muſt be left on the ſtarboard hand, and the caſk-end buoys on the larboard hand: when you are at anchor at the N. E. buoy, obſerve when the tide flows to the turbury or black ground near Dove Point, there is about 12 feet water on the bar in the Rock channel, and when the turbury ground is almoſt covered there is 18; when near the Rock perch obſerve, when the tide flows up to the perch you have 8 feet water, when it covers the lower boards 12, when it juſt covers the upper boards 17, and when it is up to the ſhores you have 24 feet on the bar. The conſtant alterations in the Hoyle and Burbo ſand banks are well known, for where the beſt channel is one week, in another it becomes a ſand bank. None but good pilots, who are here as capable as any in Great-Britain, and who are in conſtant practice in and out of the harbour, and who are always examining the depth of water and taking new leading marks as the alteration of the ſands may require, can pretend to carry a ſhip in or out of port with any chance of ſafety. A buoy is much wanted at the W. ends of the Hoyle and Mad Wharf ſands, and one at Dove Point: the Point of Air light houſe was built to direct ſhips going over Cheſter bar, therefore be cautious you do not miſtake it for the Bideſtone, or Mock Beggar lights. The time of tide and the ſhip's draught of water are the principal objects to be conſidered in going into Hoylake, and Cheſter harbour, on account of the bars, where there is but 1 fathom at low water ſpring tides, and not above 18 feet at half tide; at all tides, when the wind and tide will not admit to get into the lake, you may ſtop a tide without the N. E. buoy. See the plan of Liverpool, &c.

CONWAY.

THIS harbour might be made very convenient at no great expence; two or three perches are much wanted on the land ſide, and a buoy at the W. end of the bar; and another on that patch of foul ground, called Llys Ellis ap Clynog: this place was famous in former times for pearl fiſhing, but is now much neglected: upon all this coaſt, the pearl muſcle is found in great plenty.

BEAUMARES SOUND and CROSS ROAD.

THIS was a place of good trade formerly, and might be ſo now if the inhabitants purſued it, the harbour being large, ſafe, and well ſituated; veſſels may enter it at any time of the tide, by the W. paſſage. A buoy is much wanted, which with the perch on the Horſe, would be ſufficient directors in the day time to the Croſs Road.

To ſail to the Fryers Road, which is about a league from the Croſs Road, keep ſight of the top of the tower on Prieſtholme Iſland, that it be not covered by the high end of the iſland, and it will carry you clear of all dangers on the Angleſea ſide. In the night, or a fog, take your ſoundings from Lavan ſands on your larboard hand. When you open the lane by Fryers Houſe, you may anchor in 6 fathom ſtiff clay ground, or lie aground in ſoft mud.

RED WHARF.

THIS is a noted place for the lime ſtone trade, which is carried on to all the neighbouring counties, but as it lies open to the N. W. wind, a ſmall pier, at Porth Llongdy, which might be made for about 400l. would be of very great utility. At a place called Twll'y-wîg, in this bay, there are large looſe planks of grey marble, that have been thrown out of their beds by the ſea; one of which is 3 feet thick, 9 feet broad, and 27 feet long, containing 609 cubic feet; and as the ſpecific gravity of this marble is 2. 7. this ſtone muſt weigh above 47 tons. Near this place are noted quarries of mill ſtone, of the grit kind, which are ſhipped off here. The ſand of this place is good manure.

DULAS.

THE entrance of this harbour is narrow, and full of large looſe ſtones, which makes it dangerous going in and out; theſe ſtones ought to be brought aſhore,

to make a ſmall pier-head at Tŷn-y-nant; and the gravel from the S. E. ſide of the harbour's mouth thrown into the river, which would widen it and break much of the rapidity of the tide, occaſioned by the great indraught; this place is much frequented by ſhips, and ſomething ought to be done; a pier would not exceed 400l.

AMLWCH PORT.

THIS is but a ſmall creek, two miles to the W. of Elian Point and Light Houſe; it is no more than a cove between two ſteep rocks, where a veſſel has hardly room to wind even at high water. The Paris mine company has been at very conſiderable expence in making it a ſafe harbour, and a large veſſel might be ſaved here, in caſe of neceſſity, provided the mouth of the harbour could be diſcovered, which is difficult for a ſtranger to find; there are two ſmall white houſes for land marks, one on each ſide the dock, which have lights in them at night, that make the entrance more conſpicuous. The eaſternmoſt Mouſe, a ſmall iſland near the place, is a good direction till you come cloſe to ſhore. Near this place is Porth Elian, where the Liverpool pilot boats lie afloat in 8 fathom water, to be ready to meet any veſſel in the offing; and not far from hence is that famous copper mine Paris Mountain; at this port the ore, &c. is ſhipped off.

CAMLYN.

HERE is a convenient place to make a ſmall dock, nature having laid out the lines of one ready to our hands; or a ſmall pier might be made which would make it a ſafe lying place for coaſters; a perch ought to be erected on the eaſtern end of Harry's Furlong, a very dangerous ſpot of foul ground. Here and at the Coal Rock numbers of veſſels have been loſt, the rock being exactly in the trade way, and ſome care ought to be taken of men's lives more than has been hitherto; on this dangerous coaſt and near to this place is a famous quarry of the ſtone Aſbeſtos, a beautiful marble, in which is found the linum abeſtinum, called here ſalamander's wool; of a ſubſtance like flax, that will bear common fire; it is mentioned by Pliny in his natural hiſtory, and others, who ſay the antients made cloth of this foſſil flax, in which they burnt the hearts of their deceaſed princes, to preſerve their aſhes; and at Llanbadrig, three miles eaſtward of this place, there is a great body or vein of ſtrong oker of various colours, and an extraordinary fine white clay, of the cimolia kind. Painters, potters, ſtone cutters, miners, &c. may find here, materials that may be of ſervice to them.

HOLYHEAD.

THIS is a dry well ſheltered harbour, with ſoft ground to lie on, except in N. W. winds, which renders it dangerous for large ſhipping to lie in; if a pier was run out to the S. E. from the ſalt houſe, on the S. point of the Salt Iſland, within which large veſſels might lie afloat; and the N. ſound, and the ſound of Parry's Iſland, walled up, it would prevent the ſwell in the harbour; all this may be done at the expence of about 8000l. it would then be a ſafe harbour, but now it is only one of the rough drafts of nature, without the helping hand of man. This is the ſtation of the packets between England and Dublin: on the N. point of Salt Iſland, the Charlemont packet, belonging to Parkgate, was loſt on the 18th of December, 1790, when 110 ſouls periſhed, owing intirely to there not being a draught of the harbour. There is in this neighbourhood a large vein of white fuller's earth, and another of yellow, which might be uſeful to trade.

SKERRY LIGHT HOUSE. See General Chart.

THIS light houſe lies on the iſland of Skerries, about 3 leagues N. N. W. of Holyhead harbour, and about half a league from the main: the light may be ſeen 7 or 8 leagues off, and is of great uſe to navigation.

ABERFFRAW.

THIS village is noted in hiſtory for being once the ſeat of the Princes of Wales. A pier of 20 or 30 yards on Trwyn-Dû, would make this a good harbour, and would be uſeful to ſtrangers, who are often embayed. The ſand of this place is good manure; and at Llangwyfan, in the neighbourhood, there is a quarry of white marble, which, as it bears a good poliſh, may be worth the attention of ſtatuaries.

MALLDRAETH.

IF a pier was erected at Dinas-Llwyd, it would make this a ſafe lying place for large veſſels, which are here often embayed, and it would become a place of conſequence; or by contracting the entrance of Malldraeth, from Llanddwyn towards Dinas-Llwyd, an excellent harbour might be formed. Here is free ſtone for building, and at Llanddwyn a green ſtone with white and red ſpots, which will bear a good poliſh; there is likewiſe here a ponderous ruddy ſpar, in great plenty (at a place called Llangeinwen) whoſe ſpecific gravity is 4. 25. and which no doubt contains ſome metal. The principal commodities of the iſland of Angleſey are corn and

cattle: Robertſon, in his map of commerce, publiſhed about 200 years ago, ſays, Angleſea ſent to the Engliſh market about 3000 head of cattle yearly; but the iſland is ſo much improved in huſbandry ſince his time, that they amount now to 20,000; beſides at leaſt 10,000 hogs, and a great number of ſheep: after the annual fairs are over, it is computed the ſtock of cattle on the iſland is at leaſt 40,000. The beef of this iſland is ſweeter and more ſolid than the Iriſh, and it is probable would be found in the end to be cheaper to victual ſhips for long voyages, than more flabby meat, which is ſubject to waſte by ſalt, and to ſhrink in the boiling.

CAERNARFON.

THIS bar is ſo far from the ſhore, that in foggy weather land-marks are of little uſe; and as it is alſo a ſhifting bar, it may well be ſaid, they are of no uſe at all. Two buoys have of late been ſet down, one black and the other red, which were much wanted, and great care ought to be taken to preſerve them. Veſſels going in muſt leave the black buoy on the larboard hand, the red buoy on the ſtarboard hand, and the perch on the larboard hand. Veſſels drawing more than 10 feet water muſt not attempt to paſs the bar until four hours flood; the breakers about the black buoy are occaſioned by the meeting of the tides, and not on account of any ſhallows. Many veſſels take the Menai paſſage, particularly when the wind is adverſe for doubling Holyhead, but it muſt not be attempted by ſtrangers without a pilot, on account of the danger of going through the Swelly, which cannot be paſſed but on ſlack tides. Here the beſt ſlates in the world are ſuppoſed to be found, which are of the blue kind, very light and convenient for carriage, and the moſt durable of any yet diſcovered. A vaſt quantity of theſe are ſhipped for America, annually; and near Moel-y-Don, on the Caernarfon ſide, there is a large bed of a beautiful ſmall-grained white free ſtone, which ſupplies this part of the world with whet-ſtones. The hardeſt kind, if uſed with oil, is little inferior to the Turkey oil-ſtone.

The SWELLY.

THIS is the moſt dangerous part of the channel or ſtraits of Menai, an arm of the ſea, ſeparating Angleſey from Caernarfonſhire: it is called by the Welſh Pwll Keris, or Ceris, a name borrowed (it is likely) from the Roman Charybdis, ſuch another dangerous place as this, on the coaſt of Sicily. The reſiſtance the tides meet with from the numberleſs rocks and ſand banks, together with the narrowneſs of the channel, occaſions great over-falls, violent currents, and whirlpools, while the tide of flood or ebb makes ſtrong, therefore muſt not be attempted but upon ſlack tides. The tide coming from Caernarfon bar, flows here ſooner by an hour and a quarter

than the north tide at Beaumares, and makes an over-fall at Carreg-y-Pwll of about 6 feet, till it has flowed about four hours. The tide from hence rushing with great violence as far as Penrhyn Saffras, near Beaumares, meets the northern flood, which conquers it by degrees; and about an hour and a quarter before it is high water at Beaumares, the tide turns in the Swelly towards Caernarfon, which is the best time to pass: but this nick of time must be carefully observed by large ships, taking the advantage of a fair wind and a good pilot. It is common for small sloops to turn to windward among these islands, when the wind is scant; but it is not advisable for large vessels to attempt. At low water spring tides, there is not above 7 or 8 feet in the best channel.

PORTHDINLLEYN and NEFYN.

THESE are very safe and excellent harbours for ships that may be driven by stress of weather into Caernarfon bay: the pier at Porthdinlleyn, which was begun to be raised by a gift of 600l. from king George I. but never finished, is now almost in ruins, and if not looked after, this excellent harbour will be quite destroyed. There is a small pier at Nefyn which is found very useful for the herring fishery and coasting vessels,—this pier likewise is falling to decay.

BARDSEY ISLAND, SOUND and ROAD.

BARDSEY island being very high on the southern side, is the first land generally made in St. George's channel; and it is allowed by most commanders of ships, that if a light house was erected thereon, it would be the means of saving abundance of vessels that are continually lost in the neighbourhood, owing to the causeway, and the sand banks near the island, and it would be a good guide to the capital road of St. Tudwal's.

St. TUDWAL'S ROAD.

THIS famous road is reckoned to be one of the best and safest in Great-Britain, there being a good outlet, and it is so extensive, that it would contain the whole navy of England, with good holding ground of stiff blue clay: on the S. W. side of the road, there might be made a good dry harbour, for small vessels, by running out a pier from Penrhyn-dû point to the northward, which might be done for about 400l. A perch is much wanted on Carreg-y-Trai, and another on the N. end point

of Ynis Tudwal,—thefe are abfolutely neceffary. At a place called Mynydd-y-Rhiu, not far from hence, there is a blackifh heavy hard ftone, which is reckoned better than brafs for the center pins of engines to turn on; and further on, towards Bardfey found, there is a beautiful quarry of red marble, which will bear a fine polifh.

PWLLHELI.

THIS is a fafe good harbour, and well fheltered from all winds; a perch is much wanted at the extreme end of Carreg-yr-Imbill rocky point.

SARN BADRIG, or PATRICK's CAUSEWAY.

THIS is a ledge of rocks very narrow and fteep on the N. fide, but with regular foundings on the other; it is dry at low water fpring tides for about 21 miles to fea, ftretching out from the coaft of Merionethfhire, and lies about E. N. E. and W. S. W. The extreme end is about 4 leagues S. S. W. from St. Tudwal's road. Numbers of veffels have been loft here, owing, in a great meafure, to Captain Collins' chart, which makes 10 and 17 fathom in the very middle of it, when it is correctly afcertained to become dry the laft quarter ebb; and he is too clofely followed by all our mercenary chart contrivers, few of whom ever faw the places they pretend to defcribe; this furely is a crime equal to making falfe lights, to miflead veffels for the fake of the wreck. There are feveral large loofe ftones on the extreme end, dry at low water fpring tides; one of which is 4 yards diameter, and would bear fixing a perch on; this would be of general ufe to navigation. Hiftory informs us that all the bay between this Caufeway and Cardiganfhire, was formerly dry land, called Cantref Gwaelod, or the Bottom Hundred, and was fwallowed up by the fea in the time of Gwyddno Goronhir, who was Lord thereof, about A. D. 500. Thofe who defire to be better acquainted with the caufeway, will confult the general chart.

BARMOUTH.

THIS harbour is the beft bar harbour in Wales, but the mountains are fo high about it, that land-marks would be of no ufe in foggy weather; a buoy is really wanted at each bar. Up the river near Dolgelley, there is iron-ftone in great abundance; fome attemps have been made to manufacture it, but it did not fucceed through want of fkill; and near this place is one of the greateft veins of marcafite or fulphur I ever met with, containing fome fmall veins of copper ore.

ABERDOVEY.

THE bar of this excellent harbour has been forced close to the N. side of the river, owing to the wind blowing so frequently from the southerly quarters. Buoys only can be of use. Two houses or turrets might be erected on Cers Fochno, on the Cardiganshire side, in a line with the bar, which would be of service in clear weather.

ABERYSTWITH.

HERE a great part of the year is lost to trade for want of a good harbour, and the bar is so often choaked up, that the smallest vessels are frequently obliged to lie till a land flood sets them at liberty. A good harbour would be of the greatest advantage to the trade of the town, and of general utility and service in this deep bay, particularly to ships that are driven in by stress of weather, and prevent, which but too frequently has happened, their being stranded or lost.

The improvements lately made on the N. side of the river have been entirely demolished, but it is thought, if a pier was carried to sea on the W. side, it would probably keep it within its bounds. At the Wûg, on the N. side of the town, a capital harbour might be made, by running a pier out on the ridge of rocks, which may be effected at the expence of about 20,000l. this would then be the best situation on the coast of Wales, for the station of packets between England and Ireland.

CAER WYDDNO, or PATCHES, and SARN GYNFELYN.

THIS is a patch of foul ground lying about 2 leagues N. W. of Aberystwith, dry on some low veres, and very dangerous; from hence there is a narrow ridge of foul ground to Gwallog, called Sarn Gynfelyn, which makes the bay of Aberystwith. A perch might be erected on Caer-wyddno, or Patches, which would be of very great service to navigation, and be the means of preventing numbers of ships being lost.

ABERAYRON.

A small port about 15 miles S. of Aberystwith, the bar of which is dry at low water; a buoy is much wanted at the extreme end of Sarn Cadwgan, which would be of great service to strangers when driven in here by stress of weather.

NEW QUAY, or KEY.

HERE is an excellent well ſheltered road, with a ſmall pier, which is almoſt in ruins; it has a good outlet, and is much frequented by ſmugglers: a perch is much wanted at the extreme end of that patch of foul ground, called Carreg Ina, which would render it a ſafe road for large ſhipping.

CRIBACH ROAD.

TWO leagues E. of Cardigan iſle, lies Cribach Road, which was much frequented by the French in former wars, and ſhews how well that nation was acquainted with our coaſt. It is a ſnug road, and a pier might be made at little expence.

CARDIGAN.

HERE an excellent harbour might be made at Pen'yr-Ergyd, by running a pier to the S. W. which may be compleated for about 1000l. A buoy is much wanted on the bar, or elſe a houſe or turret on the hill, in a line with Pen'yr-Ergyd and the bar; as the preſent land-marks are of very little uſe, for in foggy or dark weather they are not to be perceived, being at ſo great a diſtance from the bar. This place is noted for the ſalmon fiſhery; and up the river the King's wear of Kilgerran, lies.

NEWPORT.

THIS bar is rather dangerous, on account of the channel being driven ſo cloſe to the rocks on the S. ſide: there are old piles yet to be ſeen at low water mark where the bar was formerly, and where it ſtill ought to be. In this bay there is a quarry of ſlates that ſupplies all the coaſt; and not far from hence there is a vein of allum earth, never worked.

FISCARD.

HERE a dry harbour might be made for ſmall veſſels. Our frigates have often run into Fiſcard road in a ſtorm, and veſſels may lie well there in 5 or 6 fathom water, if they have good ground tackle, the ground being a ſtrong blue clay and ſand; in northerly winds veſſels muſt lie cloſe in ſhore, on account of the ſwell being ſo very great. This might be made an excellent road, by filling up the ſound between the rocks

called the Cow and Calf, and the ſhore; the expence would not be above 10,000l. as there is plenty of large looſe ſtones near at hand, and all other materials neceſſary for ſuch a work.

RAMSEY ROADS.

HERE two perches are abſolutely wanted, and trade ſuſtains a great loſs by their having been ſo long neglected,—one on the horſe, and another on the horſe-ſhoe, two very dangerous rocks, in the trade way. Theſe would make the paſſage ſafe for all veſſels, and would be very convenient in eaſterly winds, to ſave going round the iſlands. Seals breed in plenty about theſe iſlands, and great profit might be made from their ſkins and oil, if attended to.

SOLVACH.

THIS harbour, if it was improved, would be very uſeful for veſſels driven into Bride's bay by ſtreſs of weather; but in its preſent ſtate, it is next to an impoſſibility for a ſtranger to find out the entrance. The rock in the mouth of the harbour, and the high lands about it, make it appear as one ſolid cliff, though there is 3 fathom at low water between and the rock. A white houſe or turret ought to be erected on the high ground on St. Elvis' point, and another on the oppoſite ſide of the harbour, that could be ſeen from any part of the bay. Some ſtones in the mouth of the harbour ought to be blown up, and the S. point of the entrance entirely carried off, as far as high water mark:—all this would not exceed 500l.

GOLDTOP ROAD.

A pier on Burrow head would make this a very ſafe road, in 3 or 4 fathom water, and the beach by that means would be cleared of the large looſe ſtones which now cover it; if this place was improved it would ſoon become a place of great trade, as there are ſeveral coal works in the neighbourhood, but even as it is, a veſſel in diſtreſs will find a ſafe riding.

MILFORD-HAVEN.

THIS is reckoned one of the moſt extenſive and beſt ports in his Majeſty's dominions; conſiſting of roads, harbours and creeks, that would perhaps contain all the ſhipping in Europe: but many of the harbours here, as well as in other ports on the Welſh coaſts, want repair; and ſome notable improvements might

be made in them: if the legiſlature would eſtabliſh a fund for that purpoſe, it might be the means of raiſing the ſpirit of trade in many places where the inhabitants are utter ſtrangers to it.

NANGLE ROAD.

THIS is one of the excellent roads in Milford-Haven where our men of war and other large ſhips lie, in want alſo of ſome improvement. At about half-flood all Nangle ſlutch or ooze is covered over; about the middle of which there is a parcel of ſtraggling ſtones, called the Oyſter Rocks, about 4 feet high, which, as they do not appear at low water neap tides, being quarter-tide ſtones, makes the place very dangerous for veſſels that are obliged to run in there when it blows too hard in the road. Theſe, and the ſtones on Nangle point, may be removed at the expence of about 300l.

DALE ROAD and HARBOUR, MILFORD-HAVEN.

THIS is a ready outlet, where veſſels may ride in 2 or 3 fathom at low water. The pier, which is now in a bad ſtate, ſhould not be ſuffered to go to decay, and it would be very uſeful to trade if it was repaired.

The STACK ROCK and BLOCK HOUSES, in MILFORD.

IN the time of queen Eliſabeth, before the Spaniſh invaſion, two forts were begun at the entrance of Milford, one on each ſide, called Nangle and Dale block-houſes, but were never finiſhed. The ſituation of theſe block-houſes was very ill choſen, as they would annoy our friends as well as our foes; for upon a veſſel being commanded to bring too, before ſhe is well in the mouth of the haven, or in ſafety, ſhe may be driven on ſhore on the rocks and loſt, or miſs the harbour. A ſmall fort might be built on the Stack, and another on Sandy Haven point, which would command the entrance of Milford Haven, without endangering our own ſhipping. The Stack rock is always above water, and lies near the middle of the entrance of the haven, between Nangle and Dale.

NEW MILFORD.

THIS is the ſtation of the packets between England and Waterford, and is at preſent in a high ſtate of improvement, chiefly by the generoſity and attention of the Right Honorable Charles Fulke Greville.

PENARMOUTH, in MILFORD.

THIS is the mouth, or opening, of that branch of the Haven which runs up to Pembroke, where the cuſtom-houſe of Milford is. The entrance or breadth between rock and rock, is but 200 yards at high water, and 112 at low; and from 9 to 12 feet deep at low water. The navigation up this branch, is much impeded by the rubbiſh from the lime-ſtone quarries being thrown into the river, which ought not to be ſuffered, or the place will be ſtopped up in proceſs of time. Within Penarmouth, a dock might be made that would contain all the ſhipping in England; and would perhaps be the greateſt work of the kind in the world.

The CARRS.

THIS is a ridge of rocky ground, running almoſt acroſs Milford-Haven, from Pater Church towards Llanſtadwel, which makes the channel narrow and difficult for ſtrangers to follow; and as it does not appear at low water neap-tides, it renders the place more dangerous. Perches are much wanted to point out the channel. A pier might be made upon this ridge, which would make, to the eaſtward of it, a harbour not to be equalled in Great-Britain.

NAYLAND.

HERE might be made a famous dock, a mile and a quarter in length; and veſſels might lie at the dock head, in 4, 6, or 8 fathom water.

LAURENNEY.

HERE as well as at many other places in Milford, unleſs perſons in power will take care to prevent veſſels throwing their ballaſt out in the channel, it will inevitably be ruined in a ſhort time. Black-Key, Landſhopping, Hook, Little-Milford, Blackhill-Key, &c. are alſo places higher up in Milford-Haven, where ſmall veſſels load.

THE PERGUS BANK.

THIS bank lies about 2 leagues S. W. of St Ann's light houſes, and it is remarkable, that though this dangerous bank was always known to the fiſhermen of Milford, the dangers of it were never laid down in any of our charts, and but few give any account of it.

GRESHOLM ISLAND, SMALLS, and the HATTS and BARRELS

GRESHOLM iſland lies about 6 leagues to the N. W. of Milford-Haven, and is the firſt land ſeen in coming towards Milford from the weſtward, being a high round iſland, and ſteep: this was a far more dangerous coaſt formerly for veſſels that fell in with the land at night then it is at this time, the Smalls, &c. being ſo far out in the channel, that frequently ſhips were amongſt them, before the lights on St. Ann's point could be ſeen. The main rock of the Smalls which at low water is about 50 yards long, has now a light houſe upon it, lying S. E. and N. E. and from it to the S. E. there are 4 other ſmaller rocks that appear in a line before low water, extending about 100 yards, and a ſunken rock 20 yards farther, when you are all at once in 30 or 40 fathom water. From the Smalls, pointing towards Milford-Haven, there is ledge of rocks that appear at low water for about a mile, called the Hatts and Barrels, and between them and Greſholm, and near a league from Greſholm, are other rocks called Skittle, or Kettle Bottom, which come dry on ſome low veres, and are very dangerous; and in a line pointing from Greſholm to Ramſey, a league from Greſholm, is another ſunken rock, called the Pope; and N. E. of Greſholm, about 3 leagues, lies the Augre Bank, (or Tarad'r) and that patch of foul ground called the Mascus, which is ſaid to come dry on ſome low veres. All theſe dangerous rocks are falſely laid down, or no mention made of them, in all the lateſt Engliſh ſurveys that I have met with: and here it may not be improper to inform the reader, that the ſouth ſtream, (commonly called the tide of flood,) on account of the oppoſition made to the tide by theſe iſlands and rocks, and the great preſſure of water from the ſouthward, which runs here from two to three and four hours later than when it is high water on ſhore, according to the diſtance from ſhore, and the ſtream from the N. which muſt be taken particular notice of in calculating the tides, or elſe one tide may be miſtaken for another. It will be found the ſame on all head lands, where there is an oppoſition of rocks and iſlands, as among the rocks of Scilly, &c. but more where the tide runs athwart the promontory, as it doth here and at Bardſey.

The CROW ROCK.

THIS is a very dangerous rock lying exactly in the trade way, between the Briſtol channel and Milford-Haven, and is covered about 4 hours flood; it is ſurrounded with ſeveral ſunken rocks, as the E. and W. Crow's toes, &c. Though this rock doth not lie from the ſhore above one mile, yet being upon a head land, veſſels are frequently driven upon it in dark and foggy weather, and loſt; and others fearing the ſame fate, keep ſo far out in the channel, that if the wind ſlackens with them, they are carried out ſo far, they cannot fetch their intended harbour. A

perch upon this rock, it is allowed by all the traders, would be of the greateſt ſervice in navigating this coaſt; and would be the means of ſaving the lives and property of many of his Majeſty's ſubjects.

TENBY.

THIS, like moſt other harbours on the coaſt of Wales, is in want of great improvement; and a perch on that dangerous rock, called the Woolhouſe rock, would render this a ſafe road for large ſhipping. The coaſt of the bay abounds with iron-ſtone and black marble, inſomuch that the walls of Stackpool Court, the ſeat of the Right Honorable Lord Cawdor, are entirely built with this beautiful black marble, which bears a good poliſh.

CARMARTHEN, LOUCHARN, and CYDWELLY.

THE bar of theſe harbours is known to be the moſt dangerous on the Welſh coaſt, by being ſo great a diſtance from the main land, which makes the preſent land-marks in dark weather of no uſe whatever. A buoy is much wanted on the bar, and a perch on the extreme end of the middle patch, which would be in a line with the preſent land-marks and would be a good direction to the Pools.

BURRY.

THIS is an excellent harbour with about 6 feet at low water on the bar, but very open to N. weſterly winds: the ſand banks here are continually ſhifting, and great care ought to be taken of the tail of the Hooper ſand-bank, which, at times, makes the bar very narrow. There are great eddys and counter tides in Roſe-Silly bay, ſo as to render it dangerous to anchor there except in good weather.

SWANSEY, and the MUMBLES.

SWANSEY is a conſiderable ſea-port town, with an extenſive trade, but a dry harbour: great improvements are going on there at this time, in the making of new piers, &c. which no doubt will be of the greateſt benefit to the trading part of this opulent nation; and it is much to be wiſhed, the neighbouring ports would ſhew the ſame ſpirit of induſtry as the inhabitants of Swanſey, and the gentry of the vicinity have of late done.

The Mumble Flats is a dry ſheltered ſituation, with ſoft ground to lie on; veſſels drawing 18 feet water, may run in here at high water ſpring tides: there is a light houſe lately erected on the Mumble head, which has proved an invaluable benefit to the traders in the Briſtol channel. Here might be made an excellent ſituation for ſhipping, if the ſounds between the Mumble head and the ſhore were walled up, or if a pier of 100 yards was run out under the E. point of Mumble hill: the expence of which would not exceed 2000l. as there are plenty of materials at hand.

The Helwick, Mixon, Scarweather, and the Naſh ſand banks, are ſo dangerous to the navigation of the Briſtol channel, that they require the attention of the legiſlative power; all theſe banks lie juſt in the trade way, being near one-third of the channel over, between Wales and England. Perches and buoys ought to be ſet on all theſe banks, which would be of infinite ſervice to all who trade to this part of the world; and would be the means of ſaving yearly, ſome hundreds of ſouls from periſhing.

TO cloſe the work, it may not be improper in this place, to caution thoſe who ſail in St. George's channel, to be careful to make a ſufficient allowance for lee-way, in forming their courſe. It is notorious that ten veſſels are loſt upon the coaſt of Wales, for one that is loſt on the oppoſite coaſt of Ireland, yet in the ſame channel. The reaſon is obvious, the wind blowing for about nine months in the year from the S. W. and W. quarters; the ſtrong tide of flood and ebb running S. W. by S. and N. E. by N. and the indraughts of deep bays concurring, make a dead heavy ſwell, that always falls upon the coaſt of Wales, between Holy-head and St. David's-head; ſo that in eaſterly winds we feel the ill effect of it: and it is a remark made by the coaſters, that in ſailing with a fair gale of wind from the coaſt of Wales to the weſtward, a veſſel will not make ſo good way through the water as when ſhe ſails thither from the weſtward. It is no wonder, then, that the maſters of ſhips ſtranded on this coaſt, and not appriſed of theſe circumſtances, are always aſtoniſhed to find themſelves upon a lee-ſhore, when, by their reckoning, they thought they were ſeveral leagues to the weſtward. Another caution I ſeriouſly would give; and that is, never truſt too much to the ſoundings upon this coaſt; as they will be found for the moſt part deceptive; the coaſt being generally ſteep, and the ground very uneven, and not unlike the land adjoining; and againſt that preciſeneſs with which ſome perſons note their ſituations, and depend thereon, from the ground they take up, which in no inſtance is to be relied upon, as oyſter-beds, ſhells, gravel, pebbles, red and white ſand, rock, and ſlutch, will be found in the compaſs of a quarter of a mile, eſpecially if at a ſmall diſtance from the ſhore, and the veſſel going at an eaſy rate.

I have taken a vaſt deal of pains to diſcover over-falls and foul grounds, and to lay them down in the general chart; yet there may be ſome in ſo great an extent,

in that dark element, which might eſcape my notice: and in (page 11) and in the plan of Milford-Haven, I have noted, the ſtream of tide runs for ſeveral hours later on the coaſt of Wales, than it doth in the channel; and I repeat it here, that it may be conſidered with attention, that in keeping the account of a veſſel's way, proper allowance be made for lee-way.

Since every care has been taken to give places their proper names in the plans and in the general chart, and as moſt of the names are Cambro Britiſh, commonly called Welſh or Gauliſh, which is the pureſt, and moſt conſiderable branch now exiſting of the Old Celtic, a renowned mother tongue; there may be ſome difficulty in the pronunciation thereof, to thoſe that are ſtrangers to the Britiſh orthography; therefore, for the ſake of thoſe, who, on account of trade or other correſpondence, or who have a curioſity to ſearch into the origin of languages and nations, would wiſh to know the true pronunciation of thoſe names, which is the real teſt of languages (letters being but arbitrary marks,) I have here inſerted a table of the Cambrian letters, according to the preſent orthography, compared with the ſounds in the Engliſh and other neighbouring languages.

IN the Cambrian or Welſh language, there are at preſent but ſeven open ſimple ſounds or vowels, denoted by a, e, i, o, u, w, y. I ſhall only remark that no conſonant or vowel in this antient language, ever alters its ſound, or is ever mute, even in dipthongs; which is an excellency few other living languages can boaſt of.

The CAMBRIAN or WELSH ALPHABET,

AS IT IS NOW USED.

a	as	a Engliſh
b		b Engliſh
c		k Engliſh
ch		ch German, j Spaniſh, qu Scotch
d		d Engliſh
dd		th Engliſh, in *that* and *thoſe*, never as in *thick*, *thin*
e		e Engliſh
f		v Engliſh
ff		f Engliſh
g		g Engliſh, in *gargle*, never as in *George*
h		h Engliſh
i		i Engliſh
l		l Engliſh
ll		l Engliſh, aſpirated, peculiar to the Welſh only
m		m Engliſh
mh		m Engliſh aſpirated, not unlike mh in Amherſt
n		n Engliſh
ng		ng Engliſh, in *ſing*, *King*
nh		kn Engliſh, in *knight*, *knave*
o		o Engliſh
p		p Engliſh
ph		ff Engliſh, *luff*
r		r Engliſh
rh		rh Engliſh, in *Rheniſh*
s		s Engliſh
t		t Engliſh
th		th Engliſh, in *thick* and *thin*
u		e Engliſh, in *drew*, *new*, *knew*
w		oo Engliſh, in *poor*, or w Engliſh, in *wallwort*
y		u Engliſh, in *purl*, never as in *pure*

THOUGH it would be needleſs to mention to ſea-faring men in general, the uſe of the following rules, &c. but as this performance may fall into the hands not only of able and experienced ſeamen, but into thoſe of raw ſailors, it will not be amiſs to give a few examples of the method generally preſcribed for finding the Golden Number, Epact, Leap-year, &c.

To find the golden number, or the cycle of the moon, which is the revolution of 19 years, as invented by Meton.

RULE.

Add 1 to the given year, and divide the ſum by 19, the remainder will be the golden number; but if nothing remains, the cycle is out, that is, 19 is the golden number.

EXAMPLE.

Required the golden number for 1801.

By adding 1 to the preſent year, gives 1802, this divided by 19, gives 94 for the quotient, and the remaining 16 is the golden number for 1801.

Required the golden number for 1804.

By adding 1 makes 1805, this divided by 19, gives 95 for the quotient, and as nothing remains, the golden number is 19.

To find the leap-year.

Divide the given year by 4, if nothing remains, it is leap-year; but if 1, 2, or 3 remains, it is ſo many years after leap-year, as the remainder is: thus 1801 divided by 4, gives 450, and the remaining 1 ſhews that it is the firſt after leap-year: but by an act of parliament, the year 1800 was not to be accounted a leap-year, therefore 1801 is the fifth after leap-year, and ſo on until the year 1804, which will be a leap-year.

To find the epact, which is a number whereby is noted the exceſs of the common ſolar, above the lunar year, and thereby may be found out the age of the moon every day of the year, &c.

RULE.

Divide the given year by 19, the remainder multiply by 11, and the product will be the epact, if it does not exceed 29; but if it does, ſubtract 30 from it, and the remainder will be the epact, for it never exceeds 29.

EXAMPLE.

What is the Epact for 1801.

```
Divided by 19)1801(94
              171
              ..91
               76
Remainder . .  15
Multiplied by .  11
Divided by 30)165(5
              150
The epact required . 15
```

Or add 11 to the epact for the preceding year, but subtract 30 whenever you can. The epact for 1801 is 15, for 1802 is 26, for 1803 is 7, &c.

To find the Moon's Age on any given day.

To the epact add the day of the month, and the number for the month, and the sum, if it does not exceed 30, is her age; but if it does, subtract 30 from it, and the remainder is her age.

The Epact or Number for each month are as follows.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
In common years	0	2	0	2	2	4	4	6	7	8	10	10
In leap years	0	2	1	3	3	5	5	7	8	9	10	11

EXAMPLE.

Require the Moon's Age the 4th of June, 1801.

To the epact 15, add the number for the month 4, and the day of the month 4, and the sum is 23; which is the moon's age the given day.

Require the Moon's Age the 15th of June, 1801.

```
The number for the month .  4
The epact . . . . . . . . . 15
                           ---
          Sum . . . . .    34
          Subtract . . .   30
                           ---
The moon's age required . .  4
```

To find the Moon's Southing, or when on the Meridian.

Multiply the moon's age by 4, and divide the product by 5, the quotient is the hours, and the remainder is the minutes, when she is upon the meridian.

Require the Moon's Southing the 1ſt of April, 1801.

The epact	15
Number for the month .	2
Day of the month . . .	1
Moon's age . . .	18
Multiplied by .	4
Divided by .	5)72(14
	70
	2
Multiplied by .	12
	24

Hence it appears, that the moon comes to the ſouth at 24 minutes after 2, in the afternoon; and ſubtracting 12 hours 24 minutes from it, leaves 2 the time of ſouthing on the following morning.

N. B. From the full moon to the change ſhe comes to the meridian, or ſouth, in the afternoon; but from the change to the full, in the morning.

A TABLE,

For the ready finding the day of the month the new moon will fall on till the year 1900; by which the moon's age may be found for any given day, by knowing the *Golden Number*, according to the method generally uſed.

Golden Number.	Jan: New Moon.	Feb. New Moon.	Mar. New Moon.	Apr. New Moon.	May New Moon.	June New Moon.	July New Moon.	Aug. New Moon.	Sept. New Moon.	Oct. New Moon	Nov. New Moon.	Dec. New Moon.
1	29	28	29	28	27	26	25	24	22	22	20	20
2	18	17	19	17	17	16	15	13	12	11	10	9
3	8	6	7	5	5	3	3	2	1:30	29	28	27
4	26	25	27	25	25	23	22	20	19	18	17	17
5	15	14	16	15	14	13	12	10	8	8	6	6
6	4	3	5	3	3	1	1:30	29	27	27	25	25
7	23	22	22	21	20	19	18	17	16	15	14	13
8	12	10	12	10	10	8	8	6	5	4	3	3
9	1	—	1	29	29	27	27	25	24	23	22	21
10	20	18	20	19	18	17	16	15	13	13	11	11
11	9	8	8	7	6	5	4	4	2	1	29	29
12	27	26	27	26	25	24	23	22	20	20	18	18
13	17	15	17	15	15	13	13	11	10	9	8	7
14	6	4	6	5	4	3	2	1:30	29	28	27	26
15	25	23	24	22	22	20	20	19	17	17	15	15
16	13	12	13	12	11	10	9	8	6	6	4	4
17	3	1	3	1	1:30	29	28	27	25	25	23	23
18	22	20	22	20	20	18	18	16	15	14	13	12
19	11	9	10	8	8	6	6	5	3	2	1	1:30

To find the moon's age on any given day, the golden number for the year muſt be firſt known, which will be found in the firſt column; and oppoſite that, and under the month, you will find the day of the month the new moon will fall on: the day after is the firſt day of the moon's age, and then it is no more than counting the number of days, either before or after the change, to the day required; in the like manner the time of high water may be found, at any place within this ſurvey.

[Sandford and Maddocks, Printers, Shrewſbury.